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CALIFORNIA MEDICINE

Index to Volume 67, July-December, 1947

KEY TO ABBREVIATIONS USED IN INDEX

(Or.)—Original Article.
(Ed.)—Editorial.
(MP)—Medical Progress.
(CPS)—Clinical-Pathological Conference.
(CC)—Clinical Conference.
(CMA)—California Medical Association Section.
(I)—Information.
(LE)—Letters to the Editor.
(BR)—Book Review.
(MJ)—Medical Jurisprudence.

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California MEDICINE

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Physiologic and Surgical Considerations in the Treatment of Duodenal Ulcers*

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ALTHOUGH duodenal ulcer has been the subject of extensive study for many years, the ideal treatment of this condition still awaits development. During this time many promising ideas have been tried, only to be discarded as time has proved what their actual merit is. Currently, from a surgical viewpoint, vagotomy is the procedure which arouses most interest and discussion. Although this operation is still in the phase of clinical trial, evidence is accumulating which in time will determine its proper place in the treatment of this disease. Because of the chronicity and tendency to recurrence of benign peptic ulceration, years are required, unfortunately, before the efficacy of any treatment of this condition can be accurately evaluated. Initial enthusiasm for any new therapy, either medical or surgical, should always be tempered by consideration of this fact.

All recognized forms of treatment for duodenal ulcer have as their main objective reduction of the "acid-pepsin" factor in gastric secretion inasmuch as convincing evidence, both experimental and clinical, attests the primary importance of this factor in the genesis of duodenal ulceration. Likewise it has been demonstrated that the desirability of any given treatment is dependent on the thoroughness with which reduction of gastric secretion is accomplished and the lack of unfavorable associated effects or sequelae. Medical measures in the treatment of duodenal ulcer have become increasingly effective and current investigations give promise of making them even more so. At the present time it is recognized that medical treatment should be the primary form of therapy in virtually every case of duodenal ulcer.

SURGICAL INDICATIONS

Granting that medical treatment should be employed routinely in the management of duodenal ulcer, what are the indications for surgical treatment? In our experience[7] at the Mayo Clinic surgical intervention is necessary in only about 10 to 12 per cent of cases in which the diagnosis of duodenal ulcer is made. The complicating features which may render surgical treatment advisable are generally recognized to be perforation, obstruction, hemorrhage, failure of medical management and any question as to the benignity of the lesion.

All agree that acute perforation of a duodenal ulcer constitutes a surgical emergency which usually requires only simple closure of the perforation. The subacute perforating ulcer is one of pronounced activity causing varying degrees of penetration through the wall of the duodenum. In the advanced case the entire thickness of the wall of the duodenum has been eroded and the base of the crater consists of adjacent tissue, usually pancreas. When an ulcer of such pronounced activity is present medical management often will be unsatisfactory.

Obstruction caused by duodenal ulcer may be either inflammatory or sclerotic in nature. The inflammatory type usually is seen during a subacute exacerbation of symptoms. Under proper medical management in a case of this type obstructive symptoms usually will disappear in a week or ten days. After several such episodes, however, it is doubtful whether medical measures will effect lasting relief. When a definite cicatricial type of obstructive lesion exists, the problem is at least

* Read at the Seventy-sixth Annual Meeting of the California Medical Association, Los Angeles, April 30 to May 3, 1947.
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partially mechanical in nature and surgical intervention becomes essential.

Hemorrhage may present itself either as active massive bleeding or as a history of recurrent bleeding without active bleeding when the patient is examined. Opinion differs as to the type of treatment advisable for acute massive bleeding. At present it is our practice to institute medical treatment in all cases in which massive bleeding occurs. If the patient is more than 45 years of age and medical treatment has been continued for 48 hours and there is evidence of continued or recurrent bleeding, immediate surgical intervention is advised. A history of recurrent hemorrhage, particularly if the hemorrhage comes with little warning or while the patient is following a fairly good medical regimen, makes surgical treatment seem advisable.

Failure of medical management to relieve symptoms of ulcer long has constituted an indication for surgical treatment. Care must be exercised, however, in determining just when failure of medical management has occurred. One should be satisfied that an adequate regimen has been followed.

Occasionally uncertainty will exist regarding the exact diagnosis in a case of suspected duodenal ulcer. This occurs most often when there is an obstructing lesion at the pylorus. One should remember that a small carcinoma in this region can closely simulate a benign ulcer. If uncertainty exists in this differential diagnosis operation should be advised.

Other factors which in a borderline type of case may influence one's opinion in favor of surgical treatment include excessive gastric acidity, long history, unfavorable social or economic status of the patient which virtually prevents satisfactory medical treatment and symptoms of such severity or persistence that a medical regimen is required which is incompatible with a normal life.

VAGOTOMY

Physiologic Aspects:

The excellent work of Dragstedt and his associates,[9-13,15,29] which has been published in a series of reports starting in 1943, has clarified and expanded knowledge of the neurophysiology of the human stomach. These physiologic observations pertaining to the vagus nerves have been substantiated by Moore, Grimson,[14,28] and their associates. In brief, earlier work on the physiology of the vagus nerves in the experimental animal[3,16,19,22,26,30] has been corroborated in some instances and further developed in other regards. Pavlov first demonstrated the importance of these fibers in the cephalic or psychic phase of gastric secretion. After complete section of all vagal fibers to the stomach this portion of gastric secretion is eliminated.

In contrast with certain opinions,[26,32] it has now been shown that the human stomach secretes constantly.[11,17,27] In the normal person, in the absence of stimulation caused by ingestion of food, the secretion is relatively small in amount and the value of free acid which it contains is low. In the patient who has a duodenal ulcer the reverse is true, the amount of secretion is large and the value for free acid is relatively high. For example, Dragstedt[11] found that the normal person secretes 250 to 400 cc. of gastric juice during the night. This secretion contains free hydrochloric acid ranging in amount from 0 to 20 clinical units. In contrast, a patient who has duodenal ulcer secretes during the night 600 to 2,500 cc. of gastric juice which contains free acid ranging in value from 40 to 110 clinical units. Calculated in terms of acid it is estimated that a patient who has duodenal ulcer secretes two to ten times as much hydrochloric acid as the normal person. Dragstedt[11] has observed further that this excessive nocturnal secretion found in the patient who has duodenal ulcer is reduced to normal after resection above the stomach of all vagal fibers. The clinical corollary is obvious when one considers the importance of gastric acids in the causation of duodenal ulcer.

It has been accepted for some time that stimulation of the vagus nerve produces gastric juice high in pepsin as well as in hydrochloric acid. Reduction of pepsin may be almost as important as reduction of acid when one considers the strong proteolytic properties of this enzyme in the presence of an acid mixture. In fact, probably one should always speak of the "acid-pepsin factor" in reference to the production of duodenal ulcer rather than merely the "acid factor," which has come to be the term commonly used. The "neurogenic factor" long has been recognized clinically as one of importance in cases of duodenal ulcer. It is interesting to speculate on the possible elimination of this factor by vagotomy.

Histamine produces the same response after vagotomy as it does when the vagus nerves are intact. However, after the administration of a test meal, if the vagi have been severed, gastric acidity does not usually rise to the level noted prior to vagotomy because of the abolition of the psychic phase of gastric secretion. Another interesting observation[1] is the absence of any emotional effect on the appearance of the gastric mucosa after vagotomy. The full significance of this observation awaits further study. The failure of hypoglycemia to produce stimulation of gastric secretion after vagotomy forms the basis of the insulin test described by Hollander.[18]

In addition to the effect on gastric secretion exerted by the vagus nerves, a pronounced effect on gastric motility is evident. Although both motor and inhibitory effects may be demonstrated by proper stimulation of the vagus, the effect of this nerve on the gastric musculature is primarily motor. Thus, after complete vagotomy motility of the stomach is decreased. This may be observed both experimentally and clinically. Abolition of an inhibitory influence on the pylorus may be a factor in the prolonged time required for the stomach

to empty which is evident after section of the vagi. Gastric hypomotility has been responsible for certain undesirable clinical symptoms following vagotomy.

It is of definite interest that Moore and associates have noted some return to normal of gastric motility and gastric secretion, especially nocturnal secretion, one year after vagotomy. Response to the insulin test has remained negative, however, a fact which suggests that vagal continuity has not been restored. Comparable observations have been made on experimental animals.[30]

Technical Aspects:

The vagi may be severed above the diaphragm through a thoracic approach or below the diaphragm through an abdominal approach or a combination of these two approaches may be used by incising the diaphragm either from above or below and dissecting the vagal fibers for a distance on the other side. Opinions[4,23] differ regarding the approach which affords the best opportunity for complete section of all vagal fibers. The abdominal approach possesses the obvious advantage that an opportunity is presented for exploration of the abdomen and direct inspection of the lesion. Furthermore, any additional procedure on the stomach which appears advisable can be performed at the same time. Generally, in my experience, one can be more certain of locating all vagal fibers if the thoracic approach rather than the abdominal one is used.

If the thoracic approach is utilized, resection of the left eighth rib affords adequate exposure. Mobilization and isolation of the esophagus, after the pulmonary ligament has been severed and the left lung has been retracted upward, permits careful dissection of the vagal trunks just above the diaphragm. These usually occur in two main bundles with several intercommunicating branches but the anatomic arrangement of these nerves at this level is variable and numerous branches may be present in some cases. Two or three centimeters of each nerve should be resected.

If the abdominal approach is employed a midline incision, or preferably one to the left of the midline, is desirable. The esophagus is isolated by blunt dissection and a gauze tape is slipped around it to aid exposure of the nerves by caudal traction and rotation of the esophagus. The peritoneum overlying the esophagus is severed transversely to facilitate mobilization of the underlying structures. Generally it is helpful to sever the triangular ligament which attaches the left lobe of the liver to the diaphragm and retract the liver to the right to aid visualization and mobilization of the esophagus. The nerves are located by palpation and also by direct vision. Again, a generous portion of each nerve should be resected.

Clinical Results:

Accurate evaluation of the effectiveness of vagotomy in the treatment of ulcer requires first that a uniform type of case be considered, second that the vagotomy be complete and third that no associated surgical procedure be performed. Three methods are used currently to determine whether vagotomy has been complete: the insulin test of Hollander, the response to sham feeding and the amount of gastric secretion produced during the night. To obtain accurate information the postoperative results of a given test should be compared with the preoperative findings. Probably no one of these tests affords entirely reliable evidence regarding the completeness of a given operation; however, they are the best tests available at this time. The development of marked gastric hypomotility after vagotomy, as evidenced by gastric retention in the absence of any demonstrable organic obstruction at the outlet of the stomach, probably affords the most reliable evidence that all vagal fibers to the stomach have been severed. Kymographic tracings made from a balloon in the stomach reveal objective evidence of decreased gastric motility after complete vagotomy but such observations do not afford a wholly satisfactory clinical test. The vagus nerve does not transmit sensory fibers from the stomach. Relief of pain caused by ulcer after section of the vagi probably is explained on the basis of decrease of gastric acidity and motility.

Although vagotomy was employed many years ago,[2,20,21] in the treatment of a limited number of patients who had duodenal ulcer, for various reasons significant interpretations of the clinical results in these cases were not established. Since the reintroduction of vagotomy by Dragstedt, insufficient time has elapsed for evaluation of ultimate results. Early results have been reported by various authors but, unfortunately, these are not easy to evaluate. In some instances, opinions of the same authors have varied from one year to the next. Certain reports have appeared in which evidence is lacking regarding the completeness of the operation. In other reports cases have been included in which vagotomy was combined with gastro-enterostomy. As mentioned previously, it is impossible to evaluate the effectiveness of vagotomy per se, at least until many years have elapsed, if it is combined with gastro-enterostomy. In certain other reports cases of jejunal or gastric ulcer have been included with cases of duodenal ulcer, a procedure which makes evaluation of any one group difficult.

Dragstedt and his associates[15] recently reported 170 cases in which vagotomy had been performed during the past four years. In 61 of these cases the thoracic approach was employed. In 109 cases the abdominal route was used and in 71 cases gastroenterostomy was performed simultaneously. In five of the group it was necessary to perform gastroenterostomy after the vagus nerves had been severed, because of gastric retention. In the entire group of 170 cases, duodenal ulcer was present in 147, gastrojejunal ulcer in 15 and gastric ulcer in eight. Postoperative secretion studies showed evi-

dence of incomplete vagotomy in 14 cases and in five of these recurrent ulceration has already occurred. There was one postoperative death in the 170 cases. Clinical results for duodenal ulcer are considered excellent.

Moore has reported 74 cases in which transthoracic vagotomy alone was used. Of this group vagotomy was performed for duodenal ulcer in 57 cases, for jejunal ulcer in 16 cases and for gastric ulcer in one case. Moore considered that the early results were good in 75 per cent of cases, fair in 18 per cent and poor in 7 per cent. In two cases subsequent gastro-enterostomy was necessary. Diarrhea occurred postoperatively in 62 per cent of cases. Emptying disorders, such as postprandial fullness and belching, were evident in 69 per cent of cases. In most instances these side effects were neither severe nor prolonged. Walters and his associates have reported 83 cases of vagotomy with variable results. In most of these cases some additional surgical procedure was performed on the stomach.

Grimson reported 57 cases in which vagotomy alone was performed. There was one postoperative death in the group. In five cases subsequent gastro-enterostomy was necessary. The operation was done for duodenal ulcer in 32 cases. In approximately 70 per cent of cases there was postoperative evidence of disturbance of motility but in only 30 per cent did these symptoms persist as evaluated in a follow-up period of six months to three years. Grimson concluded that vagotomy alone should not be used as a standard operation for duodenal ulcer. Colp reported 20 cases of thoracic vagotomy for duodenal ulcer, in four of which subsequent abdominal operation was necessary because of gastric retention.

Obviously, clinical evaluation of vagotomy for duodenal ulcer is in the formulative stage at the present time and only the greatest enthusiasts or skeptics are willing to express definite opinions on the subject. It would seem wise to retain an open mind and permit more time to pass before reaching final judgment. In the meantime it is my personal opinion that the majority of us should await late results in a few well-controlled series of cases that are already under study rather than now abandon time-tested procedures of considerable satisfaction and efficacy. If one accepts this viewpoint, at the present time vagotomy is recommended only in the exceptional case of duodenal ulcer for which surgical treatment is undertaken. In a typical case the patient would be a man 20 years of age, with a large neurogenic factor, excessive gastric acids and severe symptoms which are uncontrollable by the most careful medical management. In the absence of any gastric obstruction as evidenced clinically, by roentgenologic examination or motor test meal, thoracic vagotomy might be suggested in such a case. In the presence of obstruction, abdominal vagotomy associated with gastro-enterostomy or possibly gastric resection might be recommended. I am inclined to believe that currently the most clear-cut indication for vagotomy is in a case of jejunal ulcer following gastric resection. For duodenal ulcer, at the present time, gastric resection remains, in my opinion, the treatment of choice in most cases although it is true that in many regards this operation is far from ideal. When confronted with an exceptional type of case in which there is little of proved efficacy to offer, vagotomy may be a proper procedure, either alone or in association with some other procedure, according to the findings in the individual case.

GASTRIC RESECTION

Various types of gastric resection have been suggested and performed for duodenal ulcer. Ultimate results vary, depending on the type of resection performed and the amount of stomach removed. Cure of duodenal ulcer by gastric resection is dependent primarily on reduction of gastric acidity. The incidence of recurrent ulceration after properly performed gastric resection for duodenal ulcer probably is less than 5 per cent. If free acid is present in the gastric secretion after gastric resection the chance of subsequent ulceration is increased. While it is difficult for various reasons to estimate accurately the exact percentage of the stomach removed at the time of operation it is necessary to remove two-thirds or four-fifths of the stomach to render free hydrochloric acid absent on subsequent analysis of gastric contents. The amount of stomach that needs to be removed to accomplish this purpose varies in different patients. Regardless of the type of anastomosis that is established, an adequate amount of stomach must be removed if subsequent ulceration is to be avoided in a high percentage of cases. Also, it has been demonstrated repeatedly that all of the mucosa of the pyloric antrum must be excised if satisfactory results are to be obtained. Granting these primary premises, what type of restoration of gastro-intestinal continuity is preferable after excision of the gastric segment of appropriate size?

Type of Resection:

I believe the ideal type of operation for duodenal ulcer, when feasible, is the Billroth I, preferably with the Schoemaker modification. In this procedure, after resection of the stomach a portion of the stomach on the side of the lesser curvature is closed and the remaining opening in the stomach is anastomosed to the end of the duodenum. The advantages of this procedure are as follows: normal gastro-intestinal continuity is maintained, fewer suture lines are necessary than if a gastrojejunal anastomosis were established, closure of the duodenal stump is obviated and the possibility of jejunal ulcer is avoided. Should subsequent ulceration occur in the duodenum, the patient's condition is virtually no worse than before resection was performed.

Unfortunately, the Billroth I operation cannot be performed satisfactorily in a high percentage of

cases of duodenal ulcer because fixation, inflammatory reaction and shortening of the duodenum render it unsuitable for anastomosis with the stomach. At other times it is impossible to remove an adequate amount of stomach and effect a gastroduodenal anastomosis without tension. Thus, the operation is suitable only in a selected group of cases. This fact should be stressed, as one's primary concern should be removal of an adequate amount of stomach and the establishment of a gastroduodenal anastomosis should be a secondary consideration. Thus, a good practice is to proceed with resection of the stomach at the desired level and determine only after this has been accomplished whether the end of the stomach and the duodenum should be united. If such an anastomosis would create tension on the suture line the duodenal stump should be closed and a gastrojejunal stoma should be established. In general, a thin person, whose costal margins form an acute angle and who has a low-lying stomach and a mobile duodenum which has not been greatly narrowed or otherwise altered by ulceration, represents the type in which a satisfactory Billroth I type of operation may be accomplished. In contrast, a thick-chested, obese person who has a small, high-lying, transversely placed stomach, seldom is a suitable subject for this type of procedure.

The next choice of resection for duodenal ulcer, in my opinion, is the posterior Hofmeister-Polya type of operation with a short proximal loop of jejunum. This operation is almost universally applicable except when an unusually short, thick transverse mesocolon is encountered or some anatomic abnormality or disease renders impracticable an anastomosis placed posteriorly to the transverse colon. In this operation a portion of the gastric stump on the side of the lesser curvature of the stomach is closed and a gastrojejunal stoma approximately 5 cm. in length is established. The dependent end of the stoma extends to the greater curvature. This type of anastomosis is preferred in contrast with the original Polya operation, in which the entire cut end of the stomach is anastomosed to the side of the jejunum, because it is followed less often by occurrence of the "dumping" syndrome.[5] Furthermore, if this syndrome does occur following a Hofmeister-Polya operation it is usually temporary, in contrast to the majority of cases in which it occurs after the Polya operation, in which it may last for years. While these symptoms are not frequent after the Polya operation, when they do occur they are most annoying to the patient. To my knowledge the Hofmeister modification is not followed by any undesirable sequelae which may not occur after the Polya operation.

The Polya type of resection has been a standard procedure, probably used more frequently than any other operation, since gastric resection became widely employed in this country for the treatment of duodenal ulcer some 15 years ago. Prior to its use for benign ulcer it has been employed more or less routinely by many surgeons in the treatment of gastric cancer. From a physiologic point of view it permits resection of the stomach adequate to effect the desired reduction of gastric acidity. Postoperative motor function is satisfactory in almost all cases, being or becoming unsatisfactory only when technical difficulties, anatomic variations or recurrent inflammatory lesions develop. In this type of operation the entire end of the gastric stump is anastomosed to the side of the jejunum so that a gastro-enteric stoma of generous size, depending on the size of the stomach, is established. Many surgeons still prefer this operation, as the one of choice for duodenal ulcer, and many eminently satisfactory results have followed its use. The posterior type of anastomosis is preferred.

Unpleasant sequelae such as the "dumping syndrome" were found to occur in 5 to 12 per cent of cases in one study. Although the actual cause of these symptoms is not established beyond doubt, the explanation most widely accepted currently is sudden dilation of the jejunum caused by rapid emptying of the stomach. The symptoms, which consist of postprandial weakness, sweating, nausea and cardiac palpitation, may be most difficult to relieve. Agents which tend to prolong emptying time of the stomach, such as fats, hydrochloric acid if there is achlorhydria, and occasionally ephedrine before meals, may be helpful. It is my practice to use the Polya operation if the stomach is small.

GASTRO-ENTEROSTOMY

Although gastro-enterostomy is an operation which has been used for many years in the treatment of duodenal ulcer and which has effected many favorable results, it is used infrequently today because of the relatively high incidence of jejunal ulcer which has followed its use. Gastric resection can be performed with a mortality rate comparable to that associated with gastro-enterostomy and with more favorable late results. The amount of gastric secretion and degree of gastric acidity are not reduced by gastro-enterostomy, the gastric contents merely being shunted from the duodenum into the jejunum. This change permits healing of the duodenal ulcer if the gastro-enteric stoma functions satisfactorily because under these circumstances the pH of the duodenal contents remains neutral or slightly alkaline. Although the duodenal ulcer heals, the possibility of an ulcer developing in the jejunum always is present. Motor function after gastro-enterostomy is entirely satisfactory in most cases.

Although, if the operating surgeon has had appreciable experience with gastric resection, gastro-enterostomy today seldom is a procedure of choice in the treatment of duodenal ulcer, it may be indicated occasionally. In a patient beyond middle age, in poor general condition, who has low gastric acids, who perhaps has had a long-standing selerotic type of duodenal obstruction without an active ulcer and whose state of nutrition has become extremely depleted through a process of gradual starvation, a conservative operation such as gastro-enterostomy

may be advisable. Occasionally gastro-enterostomy may be employed as an operation of expediency if the technical difficulties of gastric resection are such as to render this procedure unreasonably hazardous. Under these circumstances the patient should remain on an ulcer type of regimen postoperatively if the greatest assurance against jejunal ulceration is to be afforded. Simultaneously abdominal vagotomy might also be advisable.

TECHNICAL CONSIDERATIONS OF GASTRIC RESECTION

Duodenal Stump:

Proper management of the duodenal stump has long been recognized as one of the more important considerations when gastric resection of the Polya type is performed. Probably because of the emphasis which has been placed on proper closure of the duodenum, leakage from this region now is an uncommon occurrence. Depending on the extent and location of the pathologic process in the duodenum, one of various methods of dealing with the duodenal stump may be found advantageous. The site at which the duodenum is severed, in relationship with the ulcer, always is a matter of concern to the surgeon. Preferably, the duodenum is sectioned distal to the ulcer, the latter is removed and the duodenum is closed distal to the ulcer. In some cases, this may not be possible, because of the location of the ulcer or marked shortening of the proximal portion of the duodenum, incident to a long-standing and recurring inflammatory reaction. Although the normal distance from the pylorus to the ampulla of Vater is 7 to 10 cm., in certain cases of duodenal ulcer this may be shortened to a length of only 2 or 3 cm. In my experience actual removal of the duodenal ulcer is unnecessary and it never is so important a consideration as to warrant reimplantation of the common duct into the duodenum for the sole purpose of removing the ulcer. Likewise it seldom is necessary to open the common duct merely to insert a T tube, for the sake of aiding in recognition of the anatomic relationships of the duct.

If the ulcer is placed deeply there may be an adequate amount of the duodenum between the ulcer and the pylorus to permit section of the duodenum immediately distal to the pylorus and closure of the stump proximal to the ulcer. Under these circumstances the ulcer subsequently is bathed in the neutral or alkaline duodenal juices, is completely removed from the digestive effect of gastric juice and will heal uniformly. Likewise, permitting the ulcer to remain in no way affects the possibility of subsequent jejunal ulceration. Frequently it will be found most convenient to sever the duodenum right at the site of the ulcer. This is particularly true in case one is dealing with a deeply penetrating ulcer of the posterior wall which has caused considerable reaction in the pancreas. The base of the crater need not be removed from the pancreas but the adjacent walls of the duodenum must be mobilized adequately to permit accurate closure.

A procedure which is not recommended is to sever the stomach proximal to the pylorus and permit some of the prepyloric mucosa to remain. The incidence of subsequent jejunal ulceration after this type of operation is relatively high. If the stomach is sectioned at this level the gastric mucosa may be excised down to the pylorus and the remaining muscular wall of the stomach closed by approximation or invagination. This, however, is not a procedure of choice, as it may be difficult to be certain that all of the remaining gastric mucosa is excised and closure of the gastric wall may not be as satisfactory as one would like.

Whether any special device or clamp is utilized in closing the duodenal stump is a matter of individual preference by the surgeon. Often the use of any clamp will be found impractical and direct suture of the "open" duodenum will be found most useful. One should routinely add to the safety of the duodenal closure by "rolling" the line of closure medially so that it is buried in the pancreas. This is accomplished by approximating the anterior wall of the duodenum to the nearby pancreas by means of a few interrupted stitches of silk. Adjacent parts of the duodenohepatic and duodenocolic structures may be used to protect the superior and inferior ends of the suture line in the duodenum if one desires.

Length of Proximal Jejunal Loop:

Most surgeons now are in agreement that, when a gastrojejunal anastomosis is made, the length of the jejunal loop from the ligament of Treitz to the stomach should be short, not longer perhaps than 8 to 10 cm. Experimental evidence substantiates the statement that the incidence of jejunal ulcer is higher if a long loop is used than if one of short length is employed.

Anterior or Posterior Anastomosis:

Whether a gastrojejunal anastomosis should be placed anterior or posterior to the transverse colon in performing a polya type of gastric resection has long been a subject of discussion. The majority of surgeons experienced in this field prefer the posterior anastomosis although some still employ the anterior type. I believe the strongest argument against the latter is the fact that it requires a relatively long proximal loop of jejunum with the undesirable sequelae which this might produce. Motor function seems to be equally satisfactory after either type; however, it is my impression that the posterior anastomosis is somewhat superior in this regard to the anterior. The anterior anastomosis is easier to establish than the posterior one and occasionally may be necessary if the transverse mesocolon is unusually short and thick or an exceptionally high resection has been performed.

Postoperative Retention:

Many viewpoints have been expressed regarding the occurrence and cause of gastric retention after either gastro-enterostomy or gastric resection. In

my opinion it is determined in the majority of cases at the time of operation whether subsequent gastric retention will or will not occur. It is true that in a small number of cases edema at the gastro-enteric stoma, perhaps augmented by hypoprotcinemia, may be a factor in the occurrence of retention; however, I believe that this is the exception rather than the rule.[5] Likewise in the exceptional case angulation, inflammatory reaction or other change may take place in the distal loop of jejunum and give rise to a mechanical obstruction. In most cases, however, proper attention to certain technical aspects of the operation will avoid postoperative gastric retention.

The most important points to keep in mind in this regard are: establishment of an anastomosis so that the distal loop of jejunum is attached to the greater curvature of the stomach; proper location of the gastro-enterie stoma in the stomach; anchoring of the transverse mesocolon on the stomach at a level well removed from the gastrojejunal anastomosis; avoidance of too large an enfolded cuff of stomach and jejunum in establishing the gastro-enteric stoma, especially in the region where the distal loop of jejunum leaves the stomach; and replacement of the jejunal loops in their normal location on the left side of the abdomen at the conclusion of the operation. It is advisable to have the gastro-enteric stoma extend down to the greater curvature of the stomach and to attach the distal loop of jejunum to the stomach at this point. Likewise in arranging the viscera at the conclusion of the operation this distal loop of jejunum should be placed in the left side of the abdomen, where it normally lies. If a posterior type of anastomosis is established the gastro-enteric stoma should be brought well down below the transverse mesocolon and the mesocolon should be sutured to the stomach at a distance of at least 3 cm. from the anastomosis. Under these circumstances if the stomach retracts upward, a loop of jejunum is less likely to be drawn above the mesocolon and angulated than if the mesocolon had been sutured to the stomach close to the gastro-enteric stoma.

The diameter of the distal loop of jejunum at the point where it leaves the stomach obviously determines the caliber of the lumen through which food must pass when it leaves the stomach. If there is too much inversion of the stomach and jejunum at this level, when the anastomosis is established, it is apparent that there may be interference with proper emptying of the stomach. This interference usually is most marked during the early postoperative period while edema is present around the suture line and before a certain amount of the inverted cuff of tissue sloughs, during the normal process of ultimate healing.

SUMMARY

Only approximately 10 to 12 per cent of patients who have duodenal ulcer require surgical treatment. Obstruction, hemorrhage, perforation, failure of medical management or uncertainty of diagnosis between a benign and a malignant lesion are indications for surgical treatment.

Elimination of the neurogenic stimulation of gastric secretion and consequent lowering of gastric acidity by means of vagotomy has a beneficial effect on the patient who has duodenal ulcer. A number of favorable early results have been reported after this operation. At the present time, however, vagotomy is still in the phase of clinical trial. The difficulty of evaluating the clinical effect of vagotomy, per se, the possibility of incomplete section of all vagal fibers even in the hands of an experienced surgeon, undesirable effects of vagotomy on gastric motor function and uncertainty regarding the late results following vagotomy must all be considered in the current appraisal of this procedure.

Gastric resection in the meantime should remain a routine procedure for most surgeons in the treatment of duodenal ulcer. The posterior Hofmeister-Polya operation and in selected cases the Billroth I procedure are the preferred types of resection in most cases. Resection of the stomach adequate to effect achlorhydria and attention to certain technical details are essential for the best postoperative results.

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The Use and Abuse of Desiccated Thyroid*

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While desiccated thyroid is the oldest and perhaps the most specific therapeutic agent employed in clinical endocrinology, there is still considerable misunderstanding regarding the indications for its use, the dose to be employed, and its untoward manifestations.

Because of its specificity in frank hypothyroidism, the results obtained from the administration of desiccated thyroid may be considered, within definite limits, as a valuable diagnostic criterion. This statement is qualified because of the large number of physiological and psychological variants to be considered before a definite diagnosis can be made in the obscure or borderline case. Let us consider the physiological problems first.

For many years observers interested in metabolic disorders have known that the level of oxygen consumption — as indicated by a so-called basal metabolic rate—is not a true, or perhaps I should say, not an infallible measure of thyroid function. It is also known that some individuals are refractory to moderate doses of thyroid and that not infrequently their basal metabolic rates fall to levels lower than those encountered before thyroid ingestion. This phenomenon was further elucidated by Farquharson and Squires.[1] They studied patients with normal or moderately depressed basal metabolic rates, who had normal cholesterol values and no clinical evidence of hypothyroidism. Some of the subjects were under treatment for obesity; the others were the ordinary mill run of patients with vague symptom complexes, rarely found to be on a metabolic basis.

The authors noted that when thyroid was administered in relatively small doses, the basal metabolic rates were promptly increased, but after two or three months they usually fell to, or close to, the initial level. Continued administration of larger doses (sufficient to raise the basal metabolic rates of myxedematous patients to normal levels), produced another rise in the basal metabolic rate, followed by a gradual decrease (Fig. 1). With still larger doses, the rate rose, and remained at an elevated level. When the excessive dose of thyroid was withdrawn after prolonged administration, the basal metabolic rate fell rapidly to a point below the patient's initial level. At the same time the patient complained of mild weakness, lassitude and fatigue, the pulse became slow, and there were other indications of deficient thyroid activity. The above results were obtained whether the patients were losing or gaining weight during therapy. Riggs, Man, and Winkler have also shown that the blood iodine falls to myxedema levels shortly after discontinuing thyroid medication given to normal individuals, and does not return to normal for five or six weeks.[3] Our experiences have been much the same. (Fig. 2.)

This depression of thyroid function accounts for the fact that many physicians give larger and larger doses of thyroid to patients, erroneously diagnosed as hypothyroid, in order to raise the oxygen consumption to levels they consider normal. I have seen many young persons with basal metabolic rates ranging from —15 to —20 and lower, who have been taking from three to eight grains of standard brands of desiccated thyroid daily for a number of years simply because some physician had attempted to elevate the basal metabolic rate to —10 or above. In other words, the physician was treating the basal metabolic rate instead of the patient. As a matter of fact, these normal individuals were actually made hypothyroid by injudicious thyroid administration. When the dose of administered thyroid reaches a point where it overcomes the artificially created deficiency and speeds up general body metabolism to an abnormal degree, the physician frequently considers his treatment a success. If, however, the basal metabolic rate cannot be raised to —10 or thereabouts without producing some evidence of thyroid intoxication, he usually asks for help.

In contrast to this refractoriness, true hypothyroid patients are sensitive to ingested thyroid and the basal metabolic rate promptly rises following the administration of even small doses (one-half to one grain daily). Rarely more than two grains of thyroid are necessary to maintain the severe myxedema patient in normal metabolic balance and some such individuals keep in perfect health on much less, namely, from one-half to one and one-half grains daily. (Fig. 3.)

In addition to the above, the technical flaws incident to the arrival at a figure representing the supposed basal metabolic level are legion. It might be well to again mention the vagaries of the patient, the machine and the technician, not to speak of such apparently minor items as the cold bed, the noisy or stuffy room, and the fact that most individuals suffer from claustrophobia.

If, then, one cannot depend upon the figure or even the interpretation of the figure when it is correct, what place has the basal rate in the diagnosis of hypothyroidism? In the adult it is one of a triad of laboratory devices designed to either verify or refute one's clinical impressions of a given case. The other two are the blood organic iodine and the blood

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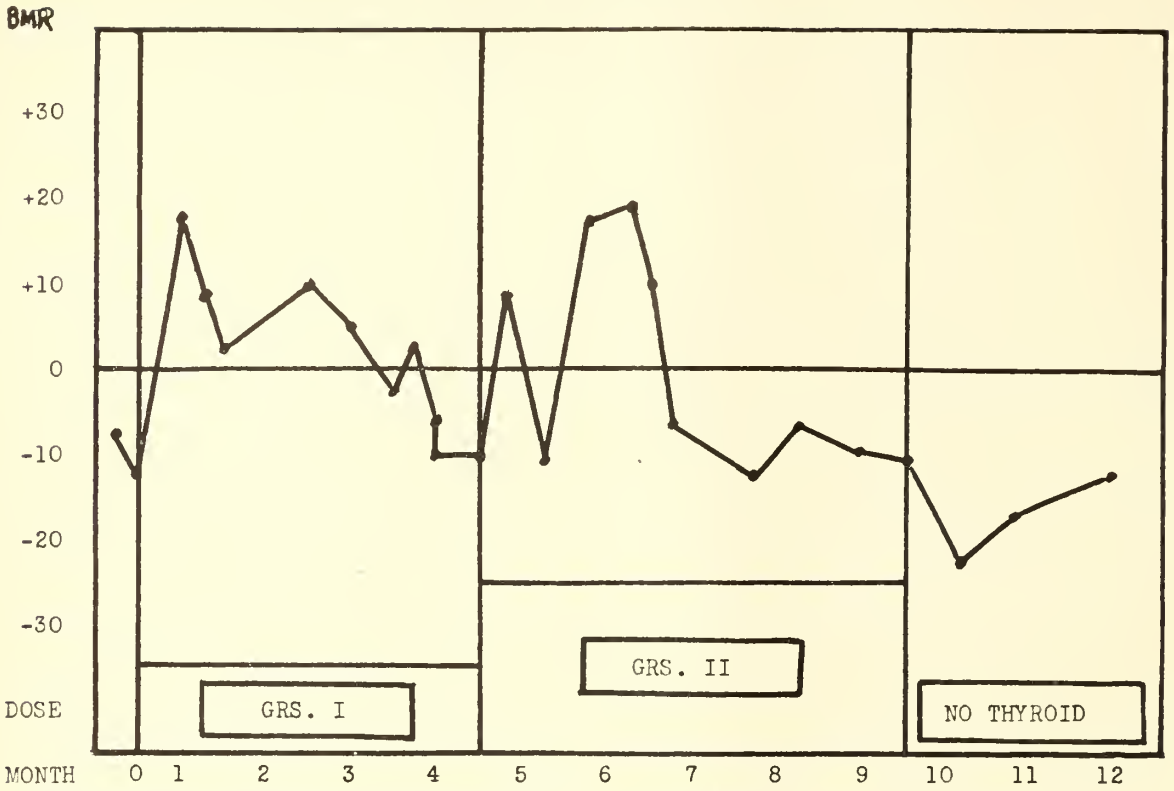


Figure 1.—Effect of Small Doses of Desiccated Thyroid on Basal Metabolic Rate of Normal (Non-Hypothyroid) Individual. (After Farquharson & Squires).

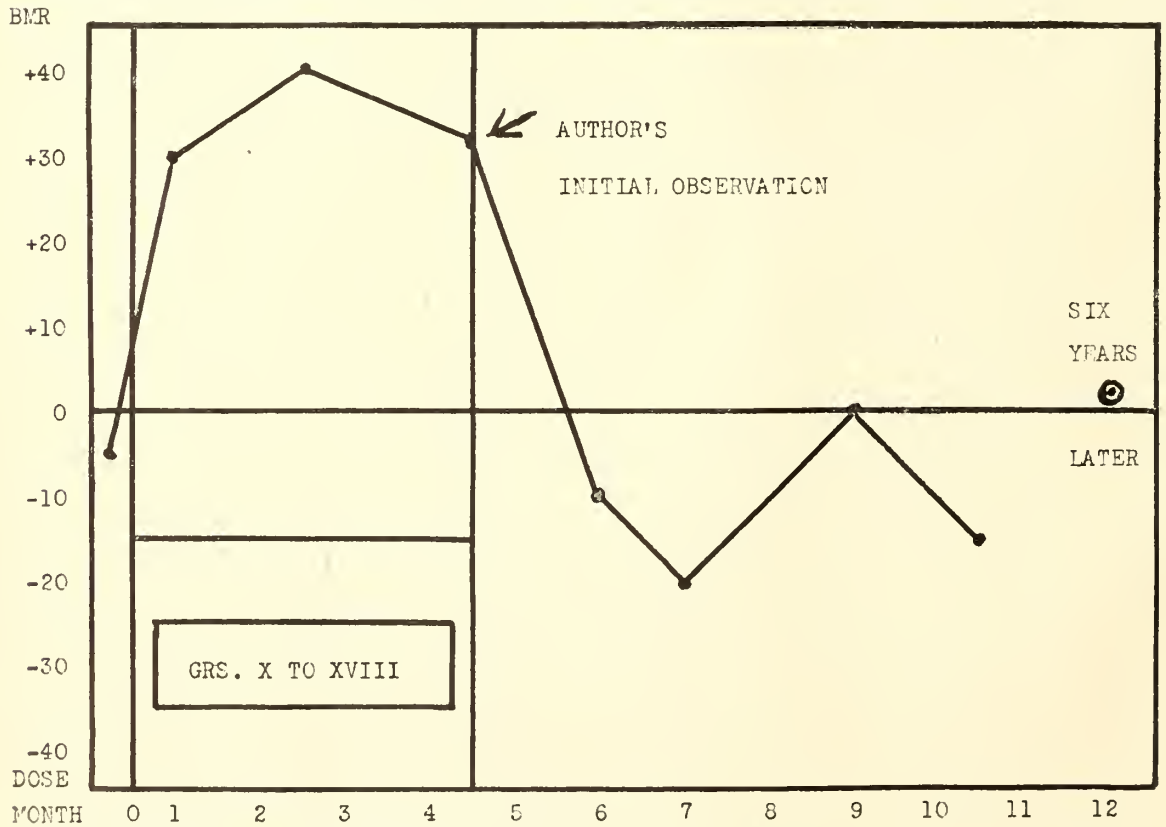


Figure 2.—Effect of Large Doses of Desiccated Thyroid on the Basal Metabolic Rate of a Normal (Non-Hypothyroid) Individual. (Author's Observation).

cholesterol. However, the iodine and cholesterol values, when considered alone, are subject to the same criticism, both as to the vagaries of the laboratory technique and the danger of dogmatic interpretation. In childhood the bone age and urinary excretion of creatin are also helpful diagnostic procedures.

While bone age continues to be the most objective evidence of the developmental status of the child, not all children with retarded bone age suffer from hypothyroidism.[4] Unfortunately, this writer has seen such a procedure endowed with as much diagnostic dogmatism as the basal metabolic rate. The same may be said of the urinary excretion of creatin in childhood. While all severely hypothyroid children excrete little or no creatin when not taking thyroid, not all children with poor urinary creatin excretion are hypothyroid. As in the case of the bone age, the urinary creatin excretion argues either for or against hypothyroidism in an otherwise carefully considered case.[5]

Even when the symptoms are vague and unorthodox, it is not difficult to arrive at a fairly prompt and accurate conclusion in the doubtful case of hypothyroidism, if a patient is not then or has not recently been taking thyroid. If the patient has taken thyroid recently (within three months) and he wonders if he really requires it—in other words, if he consults one for an opinion regarding his true metabolic status—it is necessary to discontinue the thyroid for at least three months so that the basal metabolic rate, iodine and cholesterol values can return to their non-treated or original levels. It is even better to study the patient while he is taking the thyroid and then check these values against those taken three months and even six months later. Many overzealous individuals who have been taking thyroid for years because of fatigue or depression or falling hair, or any one of a hundred complaints, could then be properly instructed to discontinue the thyroid because it is adding nothing to their welfare. However, it is sometimes difficult to get patients off of such medication, since they have created a temporary deficiency by overmedication. After the first shock of a-medication the normal individual gradually returns to his original metabolic status and feels much as he did when taking thyroid.

For example, A. L., age 19, consulted us December 12, 1945, because of nervousness and because she wished her thyroid medication adjusted. The patient had been taking thyroid for eight years, starting with grain 1 and going up to grains 4 daily. The basal metabolic rate was said to have been —30 originally (1937). As the thyroid dosage was increased, the basal metabolic rates rose slightly but were difficult to bring to normal. While the patient felt fairly well when taking grains 4 of thyroid daily, the basal metabolic rate would not go above —17.

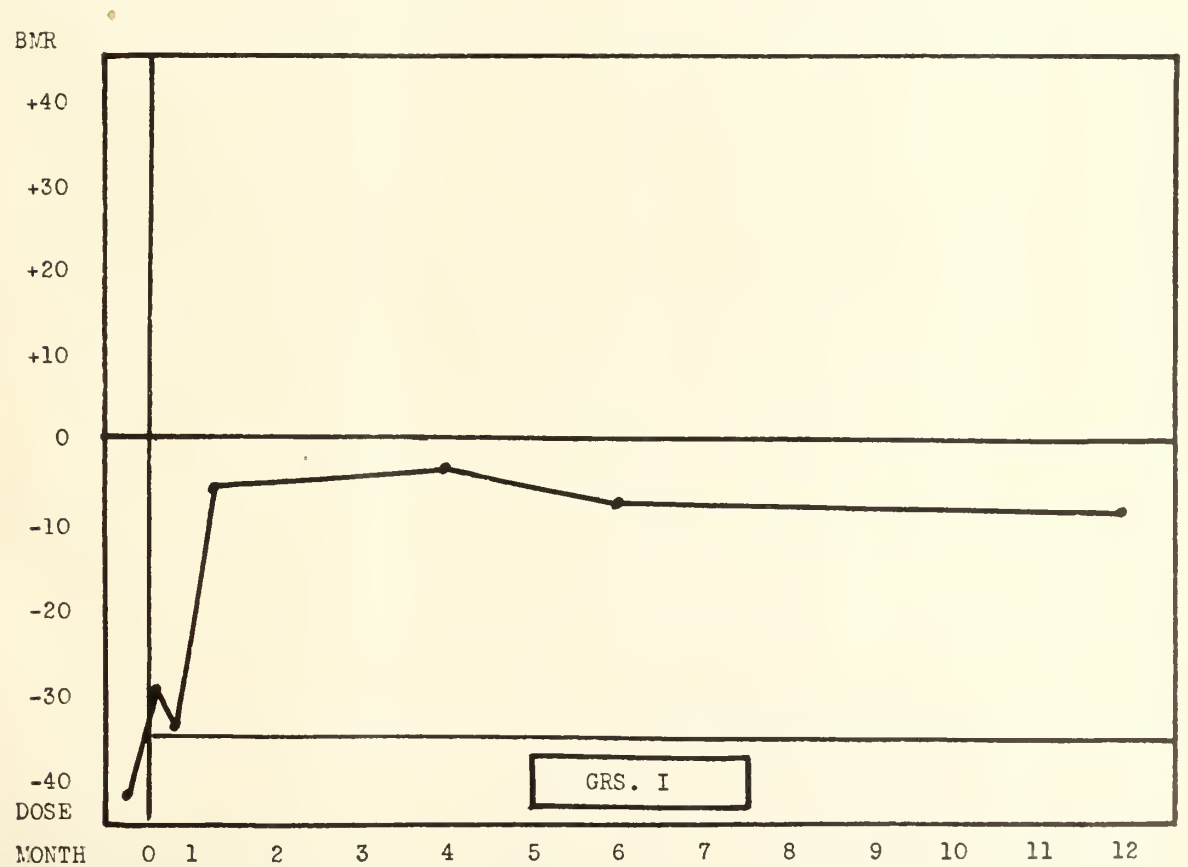


Figure 3.—Effect of Small Doses of Desiccated Thyroid on the Basal Metabolic Rate of Hypothyroid Patient (Myxedema). Modified After Farquharson & Squires.

Attempts to raise the basal metabolic rate above —17 with larger doses of thyroid always produced nervousness. Nine weeks before consulting us, the patient had been taken off of thyroid altogether by another physician. She became so cold and lethargic that she asked us to act in the capacity of a referee. To take thyroid or not to take it—that was the question. Our original observations were as follows: Basal metabolic rate —17, blood cholesterol 250 milligrams, blood organic iodine 3.2 micrograms. In spite of the low metabolic status, we advised her not to resume thyroid, but to come in again in three months for further study. At this time the basal metabolic rate was —10, blood cholesterol 140 milligrams, and blood organic iodine 5.7 micrograms—all normal findings. Still later, the basal metabolic rate was —4. The patient lost most of her nervousness and maintains a normal metabolic status without thyroid.

In contrast, the truly hypothyroid individual gradually regains his old spontaneous symptoms and may even develop myxedema. In the latter case the laboratory, if indicated at all, will soon verify the clinical impression and thyroid should be resumed.

The psychological factors to be considered are no less important, if not so confusing. What of the patient who complains of fatigue, but in whom no laboratory or clinical diagnosis of hypothyroidism can be made? Will thyroid alleviate the fatigue? It will not. Such patients have psychogenic or nutritional factors to account for their difficulties or possibly some hidden focus of infection. The same may be said of constipation, coldness, rough skin and so on ad infinitum. It is true that certain menstrual disorders, amenorrhea, oligomenorrhea, and menorrhagia are occasionally the result of thyroid deficiency and that some such afflicted individuals improve on thyroid. It seems a pity, however, that the nine sufferers whose etiology is not on a hypothyroid basis must be filtered out by injudicious thyroid administration in order to catch the one who really profits from such a regime. Such empiricism is excusable only when the patient is under careful scrutiny for a limited period. It is not unusual to see patients who have been taking thyroid for so long they have forgotten why it was originally administered.

In doubtful cases when one suspects hypothyroidism and does not have recourse to meticulous laboratory studies but must depend in a large measure upon his clinical judgment, I feel he should limit the therapeutic test period to no longer than two months. One should first take a careful history, outlining each and every one of the patient's complaints. If there are no immediate contraindications, such as coronary disease, a badly decompensated heart, active tuberculosis, etc., he may begin by giving the patient a half grain of a standard brand of desiccated thyroid once a day. Each week after this, increase the daily dose by a quarter of a grain until two grains are reached, and continue on this dosage for the balance of the two months. If, at the end of this period the patient is not enthusiastic about the results, he does not suffer from hypothyroidism, and the thyroid should be discontinued. If the majority of the symptoms have been alleviated, the patient is most likely hypothyroid and the minimum dose required (usually something between one and two grains a day) to keep him in good health, should be continued. While the patient should be observed every week during this trial period, one is justified in seeing him only at long intervals after the dose has once been established. One should take into account, of course, that in the case of the normal individual a minor state of hypothyroidism has been temporarily produced and the patient will need a few weeks to adjust to the let-down from thyroid withdrawal.

Other psychological factors of relatively minor importance might be mentioned. Since individuals who need thyroid, especially those with myxedema, are quite sensitive to ingested thyroid, the physician should be wary of the patient's reactions. I have seen patients with frank myxedema convince their physicians that they were so intolerant to thyroid that even one-tenth of a grain would produce severe nervous symptoms. In such a case it is best to give thyroid in a colored capsule and call it something else.

Some years ago I was called in consultation regarding such a patient. The woman, obviously suffering from myxedema, had convinced her local physician, as well as others in several large clinics throughout the country, that she was very intolerant of thyroid (which indeed she may have been temporarily). A pink capsule, ostensibly containing the thyrotropic hormone, but actually containing one-half grain of thyroid, completely rehabilitated the woman in a few months. The physician was later told of the deception and became quite angry.

Some patients complain that thyroid taken at night keeps them awake. I used to explain how such a reaction would be improbable. I now find it saves time and breath to tell them to take it in the morning. While we are on the subject I can see no reason why thyroid should be given oftener than once a day at the most convenient hour for the patient.

Thyroid is used consistently and erroneously in the treatment of obesity. In my judgment there is no such disorder as thyroid obesity; in fact more hypothyroid sufferers are thin than fat. If one has myxedema he will lose weight while taking thyroid until the myxedematous infiltration is metabolized and the by-products of his faulty protein metabolism are eliminated. After this point, thyroid will merely act as it does in the normal individual. Since we have pointed out that thyroid will depress the function of the gland, it could conceivably enhance rather than alleviate the deposition of fat. If one administers thyroid to the point where the metabolism is actually stimulated, increased appetite and nervousness often add to the patient's discomfort.

I have seen numerous obese individuals in whom physicians were trying to force a result by administering large doses of thyroid. One such patient was actually given eighteen grains of a very potent

desiccated thyroid daily for over a year. She was also placed on an eight-hundred calorie diet. If it had not been for the fact that she stole from fifteen-hundred to two thousand calories a day in addition to the diet, she would not have survived. While her basal metabolic rate rose to only +37 she became severely decalcified and lost several teeth through demineralization of the alveolar processes. The weight loss for that hectic year was eleven pounds. After thyroid was entirely withdrawn, the basal metabolic rate came back to around —12 in about six months, during which period she also lost forty pounds on a restricted diet. This is an outstanding example of the abuse the thyroid gland will tolerate and apparently still go back to a normal physiological status. (Fig. 2.)

It is ironical that while I was writing this paper a case report came to my attention in which an obese woman stole and ingested 100 grains of thyroid a day for over a year. She was ultimately discovered to be insane and died suddenly without benefit of autopsy. Goldfinger's[2] rather bizarre conclusion to this interesting case was that: "It is possible that too much conservatism in thyroid dosage has been used by the medical profession in the past. The factor of safety is large, and although exceeded in this case, it is suggested that a much higher dose (U.S.P.) may be used where the thyroid effect is desired. Further work upon the amount of thyroid necessary to increase the metabolic rate would seem to be in order to establish effective, but non-toxic dosage levels."

With such conclusions in the literature, it seems almost futile to preach conservatism.

Whether or not thyroid is indicated in the majority of individuals past middle age is problematical. Certainly the general metabolic processes, including thyroid function, are on the wane. This writer feels that much depends upon the arterial status and the level of the blood cholesterol. Blood cholesterol tends to rise in middle age and when no hepatic or renal disturbance can be demonstrated in one with elevated cholesterol levels, one is perhaps justified in administering small doses of thyroid over a long period without other verifying evidence of hypothyroidism.

While the injudicious use of large doses of thyroid in coronary disease and cardiac decompensation is to be deplored, one should not forget that some coronary disease is merely the end result of long-standing cholesteremia incident of hypothyroidism and some cardiac decompensation is due to a myxedematous infiltration of the myocardium. In either instance thyroid should be administered slowly, at the proper time, and in small doses. The shock of a too rapidly elevated metabolism is sometimes more than a weakened myocardium can tolerate. In such cases, the collaboration of an experienced cardiologist in treatment is paramount.

In childhood small doses of thyroid are anabolic while large doses are catabolic. When indicated nothing works in as spectacular a manner as thyroid in problems of growth and development. The most outstanding stimulation of growth I have obtained has been with doses ranging from one to two grains of thyroid daily. Larger doses have been advocated in cretinism, but it is my feeling that when two grains of thyroid will not rehabilitate a hypothyroid child, twice that much will have no better effect. If the dose is too high, calcium will be withdrawn rather than deposited, and the patient will remain on a negative mineral balance. Here again, if the patient is not truly hypothyroid, growth will not be stimulated and thyroid is more than useless.

Mixtures of thyroid and other medicaments are, in my judgment, bad medicine, unless it is first established that the patient really needs thyroid, and, second, what dose is required. Then and then only is the physician justified in adding another potent preparation such as benzedrine to a mixture designed to treat any disorder. Such preparations as we see for obesity containing thyroid, benzedrine, atropine, aloin, and what have you, are three steps back of the right direction, and should be left for our less scrupulous brothers, the irregular. When thyroid is combined with inert material such as whole ovary, testis, anterior pituitary, spleen, etc., your patient pays a fancy price for the leavings of the slaughter house and gets thyroid function and nothing else. When prescribing other hormones to a patient who also requires thyroid, give the most potent preparation available separately, so that you can evaluate each step of the treatment. All standard brands of desiccated thyroid are probably efficacious, but not necessarily grain for grain. It is best to employ one brand until one is thoroughly familiar with its potency and action. Then and then only are therapeutic comparisons of clinical value.

To sum up briefly then, thyroid is a specific drug in hypothyroidism. The administration of thyroid to normal individuals depresses thyroid function. A diagnosis of obscure hypothyroidism can be made both clinically and from the laboratory if a number of criteria are considered. Thyroid dosage in all cases, and in both children and adults, ranges from one-half to three grains a day. Small doses of thyroid are anabolic and large doses catabolic particularly but not exclusively in children. Small doses of thyroid probably postpone the aging process in middle-aged adults with moderately high cholesterol values. Thyroid should be administered alone until its full effect on a given individual is well established.

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Some Notes on the Rh and Hr Factors*

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THE literature on the subject of the Rh-Hr factors and the antibodies they incite is not only complex, but in some instances it is confusing and contradictory. Often the line of demarcation between hypothesis and fact is not clearly drawn so that it becomes extremely difficult to determine the potential significance of the available information. The following discussion is an attempt to present the nomenclatures of Race and Wiener in a form easily comprehensible to a person not acquainted with the subject and at the same time to indicate the importance and usefulness of tests for Rh-Hr sensitization.

Rh and Hr Factors:

The Rh factor, present in the red blood corpuscles of at least 85 per cent of the random white population, is an inherited characteristic, and like the Landsteiner A-B-O agglutinogens, is a permanent consistuent of the red blood corpuscles of an individual. The Rh-positive population may be further subdivided into eight phenotypic groups by means of various combinations of the three Rh factor genes, called C, D, and E by Race, and Rh′, Rh_0 and Rh″ by Wiener. These factors are transmitted in the usual Mendelian manner and occur as "allelomorphic pairs."† The capital letters C, D, and E indicate dominant antigenic characteristics (Rh factors) whose "allelomorphs" (Hr factors) would be indicated by the small letters, c, d, and e (according to Race) and Hr′, Hr_0 and Hr″ (according to Wiener). In this manner the genetic possibilities of homozygous and heterozygous individuals may be determined.

The three Hr factors, c, d, and e, may also occur singly or in combination. A reciprocal relationship probably exists between Rh and Hr—for example, if gene C is absent, then gene c must be present, and likewise D—d and E—e. The factor Hr is apparently less antigenic and therefore usually of lesser clinical importance than the factor Rh.

The nomenclatures of Race‡ and of Wiener therefore may be represented schematically for genotypic§ incidence in the following manner:

	Rh_1Rh_2 (14.5%)		
Rh_1 (54.0%)		Rh_2 (15.0%)	Rh-positive (87.0%)
Rh′ (1.0%)	Rh_0 (2.0%)	Rh″ (0.5%)	
C	D	E	
c	d	e	Rh-negative (13.0%)
Hr′	Hr_0	Hr″	

Since genes occur in pairs, one set inherited from each parent, any combinations of $\frac{CDE}{cde}$ are possible as are shown in Chart I.

Interpretation of Reactions of Red Blood Corpuscles with Specific Antisera:

Since the red blood corpuscles of 85 per cent of the random white population contain the D (Rh_0) factor—Rh antiserum specific for D is most commonly used in testing for the presence of the Rh factor in blood specimens of unknown Rh characteristic. If the exact phenotypic character of the blood is desired, it is necessary also to use Rh antisera specific for C (Rh′) and E (Rh″) factors. Anti-C will agglutinate 70 per cent, and anti-E will agglutinate 30 per cent of the bloods of a random white population.

Anti-C sera will react with all red blood corpuscles containing C factor. Likewise anti-D or anti-E will react with all corpuscles containing D or E factors, respectively.

Anti-c sera will react with all red blood corpuscles containing c factor. Likewise anti-d or anti-e will agglutinate all cells containing d or e factors, respectively.

Hr sera are sometimes used to determine homozygosity of a husband; for example, if the husband is type Rh′ (Cde) it may be useful to know whether he is homozygous or heterozygous for the C factor, that is $\frac{Cde}{Cde}$ or $\frac{Cde}{cde}$. If he is homozygous his red blood corpuscles will *not* be agglutinated by anti-c (Hr′) serum since he does not contain the c factor.

Rh-Antibodies:

An individual whose red blood corpuscles lack a specific Rh factor may become sensitized when exposed to such a factor during pregnancy or following blood transfusions. An Rh negative individual may

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† This term is used with reservations. For a pertinent discussion of the subject consult references 1 and 5.

‡ Race considers that the factors C—c, D—d, and E—e occur together within the red blood corpuscle and the presence of any one or more of the three dominant factors would therefore determine the phenotypic characteristic of Rh-positive individuals; the absence of all three dominant factors would indicate the Rh-negative individual.

§ Rh′, Rh_0, Rh″, Rh_1, and Rh_2 include the incidence of the pure phenotypic as well as the genotypic combinations.

CHART 1.—*Schema Showing Some of the Possible Rh Genotypes Which May Occur for Each of the Eight Primary Phenotypes**

(Data below the dotted line indicate uncommon occurrences)

Phenotypes	GENOTYPES		
	Complete homozygosity	Partial homozygosity	Complete heterozygosity
1) cde rh	$\frac{cde}{cde}$ ($Rh'Rh'$)		
2) Cde Rh′	$\frac{Cde}{Cde}$ ($Rh'Rh'$)		$\frac{Cde}{cde}$ ($Rh'rh$)
3) cDe Rh_0	$\frac{cDe}{cDe}$ (Rh_0Rh_0)		$\frac{cDe}{cde}$ (Rh_0rh)
4) cdE Rh″	$\frac{cdE}{cdE}$ ($Rh''Rh''$)		$\frac{cdE}{cde}$ ($Rh''rh$)
5) CDe Rh_1	$\frac{CDe}{CDe}$ (Rh_1Rh_1)	$\frac{CDe}{Cde}$ (Rh_1Rh'); $\frac{CDe}{cDe}$ (Rh_1Rh_0)	$\frac{CDe}{cde}$ (Rh_1rh)
6) cDE Rh_2	$\frac{cDE}{cDE}$ (Rh_2Rh_2)	$\frac{cDE}{cDe}$ (Rh_2Rh_0); $\frac{cDE}{cdE}$ (Rh_2Rh'')	$\frac{cDE}{cde}$ (Rh_2rh)
7) CdE Rh_y	$\frac{CdE}{CdE}$ (Rh_yRh_y)	$\frac{CdE}{Cde}$ (Rh_yRh'); $\frac{CdE}{cdE}$ (Rh_yRh'')	$\frac{CdE}{cde}$ (Rh_yrh)
8) CDE Rh_z	$\frac{CDE}{CDE}$ (Rh_zRh_z)	$\frac{CDE}{Cde}$ (Rh_zRh'); $\frac{CDE}{CDe}$ (Rh_zRh_1) $\frac{CDE}{cDe}$ (Rh_zRh_0); $\frac{CDE}{CdE}$ (Rh_zRh_y) $\frac{CDE}{cdE}$ (Rh_zRh''); $\frac{CDE}{cDE}$ (Rh_zRh_2)	$\frac{CDE}{cde}$ (Rh_zrh)

* This chart may be enlarged to include the genotypic formulas for any possible combinations of phenotypes. (The genotypes $Rh'Rh''$ ($\frac{Cde}{cdE}$) incidence 0.01% and Rh_1Rh_2 ($\frac{CDe}{cDE}$) incidence 14.5% are not included in this chart because they are composed of mixtures of phenotypes.)

therefore develop sensitization to any or all of the three factors (C, D, or E) depending on the phenotype of the immunizing cells and the biologic conditions which determine the immunization peculiarities of the individual. It is also possible for an Rh positive individual, for example one of phenotype Rh_0 (cDe) when exposed to corpuscles containing either the C or E factors (found in bloods of types Rh′, Rh_1, Rh″ or Rh_2) to become specifically sensitized to them. Therefore the exact phenotypic identification of the corpuscles is necessary in order to: explain cases of repeated transfusion reactions; explain cases of recurrent births of erythroblastotic infants in Rh-positive women; and account for any other Rh immunologic phenomenon which might not be explained by the usual routine Rh tests.

Individuals sensitized to the Rh factor by transfusion or pregnancy may demonstrate either or both of two types of Rh-antibodies, designated "agglutinating antibodies" and "blocking antibodies." Agglutinating antibodies combine with Rh-positive red blood corpuscles and agglutinate them; blocking antibodies also combine with Rh-positive red blood corpuscles but apparently do not agglutinate them.

The Rh antibodies are specific for the phenotype of the antigenic stimulus. Specific agglutinating antibodies have been found for all of the Rh and most of the Hr factors. A similar specificity exists in the case of the blocking antibodies, however, the most commonly reported blocking antibodies are those specific for the D (Rh_0) factor.

The significance of Rh-antibodies in the sera of pregnant women is still debatable, however a few *tentative* statements may be made:

1. The presence of any Rh-antibodies, either agglutinating or blocking, indicates sensitization of the host with Rh-positive red blood corpuscles either from a blood transfusion or a current or previous pregnancy.

2. If antibodies are found during the first few months of pregnancy and increase in amount as the pregnancy progresses, they may indicate: (a) An anamnestic rise of antibodies initially formed in the past and bearing no relation to the Rh characteristic

of the fetus *in utero*. In such an instance, the infant would be unaffected. (b) An Rh-positive fetus producing specific sensitization of the mother. In such an instance, the infant might be afflicted with hemolytic disease of the newborn.

3. If antibodies occur only within the last few weeks of pregnancy they may indicate initial sensitization in a mother not previously exposed to the Rh factor. In such an instance the infant might show mild symptoms of hemolytic disease of the newborn or be clinically normal.

In regard to the prediction of hemolytic disease of the newborn it may be stated that occasionally hemolytic disease of the newborn may occur in offspring of women who do not demonstrate any laboratory evidence of Rh sensitization. This occurs in roughly 10 per cent of the instances of the disease and is due to the A-B-O and Hr sensitization and other mechanisms. On the other hand, a clinically normal Rh positive child may be born to an Rh negative mother who shows abundant evidence of current Rh sensitization.

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Excretory Cystograms After Voiding

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MANY pathological conditions of the upper urinary tract and bladder can be diagnosed and differentiated by excretory urography, not only from morphological deviation, but particularly by a study of the peristaltic action of the calyces, kidney pelves and ureters and the emptying power of the kidney and bladder.

In order to get the best results it is necessary: (1) to prepare the patient by dehydrating sufficiently to get a better concentration of the opaque solution in the urine, and (2) to clear the bowel of fecal material and gas. The most uniform results have been obtained by giving the patient instructions noted in Table 1.

Table 1.—*Instructions for Preparation for Excretory Urography*

1. Regular dinner the evening before the date set for the x-ray study.
2. No fluids and no food until after the x-rays are finished the next morning.
3. Two to four A. B. S. & C. Pills (Aloin, Belladonna, Strychnine and Cascara) at 9 p. m. the evening before, the number of pills depending on the patient's bowel activity.
4. If necessary, an enema one hour before the patient goes to the x-ray laboratory. No abdominal or pelvic binder or pressure bag should be used which might interfere with urinary peristalsis.

The next important step is that the proper technique be followed by the x-ray technician. The minimum study is indicated in Table 2.

Table 2.—*Technique for Making Adequate Studies in Excretory Urography*

Films of the urinary tract to be taken as follows:

1. Before the intravenous injection of the opaque solution.
2. Three to five minutes after the intravenous injection.
3. Fifteen minutes after injection.
4. Twenty-five minutes after injection.
5. In standing position (immediately after film 4). It should be taken after a few deep breaths while standing.
6. After voiding (a film taken through bladder region). Instruct the patient to empty the bladder completely.

All exposures except the last one on the list should be on 14 x 17 films for study of the entire urinary tract, including the bladder. The last exposure listed (6) through the bony pelvis after voiding, for the bladder region, should be on an 8 x 10 film.

The foregoing serves as an excellent routine technique for x-ray technicians to follow, but for a more accurate study the roentgenologist should study the first two or three urograms and note the rapidity of concentration of the opaque solution in the urinary tract, particularly the increasing density of it in the bladder. Then he can either lengthen or shorten the intervals for the suggested 15 and 25-minute films. In general the techniques noted in Tables 1 and 2 should be followed, but if concentration is slow in one or both kidney pelves, films should be made over longer periods such as an hour or two. Also, for greater accuracy, stereoscopic films should be made of Numbers 1, 3 or 4 (Table 2), according to the concentration of the opaque solution, and of Number 6.

There are thousands of excretory urograms taken by improper and insufficient technique, leading to wasting of films and failure to make an accurate diagnosis of disease. Since this report stresses particularly study of the cystogram taken after voiding, the cases presented here have been chosen because in them the most valuable diagnostic clue was given by that cystogram.

* * *

Group 1. Lower urinary tract obstruction.

Figures 1 and 2. Contracted bladder neck evidenced by a collection of opaque urine in the retrotrigonal pouch behind the hypertrophied interureteric ridge and also in the anterior pouch of the vertex of the bladder. The author considers this sign to be the one most valuable in diagnosis and the one most frequently seen. It always indicates urethral obstruction.



Figure 1

* From the Division of Urology, Stanford University Medical School, San Francisco.

particularly that of a fibrous contracted bladder neck in both sexes. In the male it also indicates median bar or early hypertrophy of the prostate, particularly in young adults and middle aged men. I think roentgenologists should become acquainted with this sign and include it in their reports, as it is often indicative of the cause of vague complaints of illness and gastrointestinal disturbances, without particular urinary tract symptoms at the time.



Figure 2



Figure 3

Figure 3. Contracted bladder neck with more residual urine and a chronic colon bacilluria which did not clear up under extensive chemotherapy until the base of the bladder neck had been grooved and followed by a few Kollman dilatations of the posterior urethra.

Figure 4. Stricture of the membraneous urethra evidenced by residual urine in the bladder, too much to show the above mentioned signs.



Figure 4



Figure 5

GROUP 2. Hypertrophied prostate, showing characteristic shadow (where there is not a great deal of residual urine) of a rounded mass causing a filling defect in the floor of the bladder in the region of the prostate. The following cases were less characteristic:

Figure 5. Residual urine was absent, but the ureter is being pushed upward and backward and this is evidence of a mass in the region of the prostate or floor of the bladder.



Figure 6

Figure 6. The preliminary films showed several stones 1 cm. or so in diameter in the bladder, but the excretory cystogram showed a tremendously hypertrophied bladder wall, with a small diverticulum. The bladder emptied completely although there was evidence of a tremendously hypertrophied prostate by the displacement of the ureter upward and backward. At operation 50 gm. of prostatic tissue was removed transurethrally, after which 12 stones were crushed and washed out.

Figure 7. Evidence of a large residual of urine and suggestion of a large prostate, which had preoperatively been diagnosed as malignant. At operation a primary malignancy of the bladder was found, with invasion of the prostate and infiltration around the seminal vesicles.

* * *

GROUP 3. Women with residual urine.

The normal nulliparous female bladder empties completely, though occasionally it may show just a few drops of residual urine with no characteristic outline in the region of the bladder neck. If a tendency to contracture of the bladder neck exists, it results in a cystogram similar to that noted in Figure 1.

Figure 8. A small amount of irregularly distributed residual urine, indicative of early trabeculation and bladder irritability — in this case due to polyps around the bladder neck.

Figure 9. A small amount of residual urine with a tremendously hypertrophied bladder wall. The patient was a 26-year-old nun with a long history of urinary frequency, incontinence, and pain with a



Figure 7



Figure 8

full bladder which was relieved by voiding. These symptoms were typical of Hunner ulcer, which was found and permanently cured by several treatments of overdistending the bladder.

Figure 10. A large unsuspected residual of 400 cc.



Figure 9



Figure 10

of urine in a female, the mother of three children, who had been treated for nervousness for years. She had had previous excretory urograms, as well as cystoscopic examinations, and a residual urine never had been determined previously. She had very little evidence of a cystocele, but a contracted bladder neck was present. Since operation was refused, several urethral dilatations with a Kollman dilator were carried out and gave a great deal of symptomatic relief. Subsequently the urine became clear and bladder symptoms disappeared.

* * *

Group 4. Filling defects of the bladder not due to primary neoplasm.

A negative exeretory cystogram does not exclude the possibility of neoplasm of the bladder, and it is to be emphasized that there is positively no excuse for not cystoscoping every patient with hematuria and making an attempt at early discovery of its source. Most bladders with moderate sized neoplasms can empty completely unless the bladder neck is involved in such a way as to cause residual urine. If there is no residual urine, the filling defects are best noted in the preliminary series of films, all of which should include the bladder, as was emphasized in the outline on technique in Table 2.

Figure 11. Filling defect in the region of the right seminal vesicle due to a large retroperitoneal abscess, which started from osteomyelitis of the lumbar vertebrae pointed in the costovertebral angle, causing fixation of the right kidney and extending down into the pelvis on the right side of the bladder. The clinical picture was characteristic of a perirenal abscess.

Figure 12. Excretory cystogram of the same patient (Figure 11) two months after drainage of the



Figure 11

abscess, apparently stenosing the orifices of the seminal vesicles and leaving them in a dilated cystic condition, showing as a characteristic outline. The ureters are pushed upward to some extent.

Figure 13. Filling defect of the bladder caused by a large diverticulum, not diagnosed until the patient was cystoscoped. The fact that there is residual urine indicates bladder neck involvement, which was found to be of a fibrous contracted type. This film also shows that a diverticulum does not fill unless the orifice is large enough to admit the diffusion of the opaque urine.



Figure 12



Figure 13



Figure 14



Figure 15

Group 5. At times the lower ends of the ureters are best visualized and studied in excretory cystograms.

Figure 14. This film shows the ureters dilated to the bladder wall, due to chronic vesiculitis and prostatic stones.

Figure 15. This is the only film in the series to show a non-opaque stone in the lower end of left ureter, later delivered with Council Stone Basket.

SUMMARY

Not only should filling defects be kept in mind and studied in after-voiding excretory cystograms, as indicative of hypertrophied prostates, bladder tumors and pressure from outside sources, but also attention must be paid to the developmental changes in the bladder wall resulting from obstruction and from abnormal stimulation such as urethral polyps, Hunner ulcers, cystitis, and stones.

Discussion by A. M. Meads, M.D.

Doctor Dillon's paper has emphasized to me a step in intravenous urography that for the most part I have been neglecting. So partial have I been to retrograde studies of the urinary tract due to the abuse of the intravenous method in the hands of the rank and file that I have used intravenous urography only as an adjunct to the retrograde studies. Personally I would not operate upon a case diagnosed by intravenous pyelographic evidence only, unless the findings were positive without the shadow of a doubt and the use of the retrograde method impossible. About two years ago within an interval of a few months we picked up two symptomless papillary carcinoma of the bladder while investigating cases of hypertrophied prostate. I am sure anyone would have missed these tumors if a cystoscopic investigation had not been carried out. Pyelographic fluid not infrequently obscures soft stones that have been interpreted by the roentgenologist as intestinal shadows, but which are revealed in their true relationship to the bladder by the cystoscope. Having a patient void during an examination is not always a simple matter, especially when he has been without fluids for a few hours and is of a nervous temperament. Such patients after a struggle may void only a small amount, leaving enough in the bladder to be misinterpreted as a residual when it is not.

If Doctor Dillon has solved the gas prob'em in intravenous urography, I congratulate him. This is not so important of course in bladder plates, but it often obscures the pelves and ureters on one or both sides just sufficiently to prevent a positive diagnosis. Recently I saw a so-called renal tumor scheduled for surgery which was proved to be normal by retrograde studies. I heard Doctor Braasch say in one of our recent prewar conventions that he considered only 40 per cent of intravenous urograms satisfactory enough for a complete diagnosis.

Doctor Dillon has emphasized the importance of preparation before x-ray films are taken. All urologists realize this, but many internists and general men do not. In spite of our routine that is supposed to free the intestine of gas, we still have many unsatisfactory films. We have avoided enemas because they seem to add insult to injury at times.

Intravenous urograms are either good or bad. The less the disease, the better the film is apt to be. At best, intravenous urography never tells the whole truth as to the condition of the kidney urine, the true function of the kidneys, or the conditions of the mucosa of the posterior urethra or the bladder. I feel, therefore, that when intravenous urograms are ordered their limitations should be considered from the point of view of a diagnosis and the point of view of the patient's pocketbook. Most patients, after paying for a complete intravenous study, wonder why the urologist demands a complete retrograde study.

These remarks are in no way critical of Doctor Dillon, for I know that he uses intravenous urography in selected cases. He has emphasized to me the part of my intravenous studies that I have neglected, namely, the last film showing the bladder after the patient has voided.

Management of Cardiospasm*

Rudolph Schindler,† M.D., *Los Angeles*

THE clinical picture of cardiospasm is well known. Most physicians know persons who almost constantly are tortured by severe substernal pain, dysphagia and regurgitation of food. These symptoms usually render the patient unable to participate in any kind of social life. Eating in the presence of others becomes unfeasible, every attempt at swallowing food is accompanied by torturing distress and the patients become emaciated. Although death sometimes does occur as a result, it is relatively rare and frequently patients will be seen who have not been able to swallow normally for 25 to 30 years.

It seems that the fact that this disease is almost always curable is not as well known as the symptomatology. Time and again we encounter patients who have been treated with various methods without finding more than temporary relief. Such unsatisfactory treatment may even take place in our well equipped medical centers, and the procedures which could lead to complete cure are seldom carried out, obviously because they are unknown to the majority of the practitioners. In the following, neither the symptomatology nor the etiology nor the theories about the mechanism of cardiospasm will be discussed, but only the question of its management. There are four methods of treatment which require consideration, namely, (1) psychotherapy; (2) introduction of bougies through the spasm; (3) brusque dilatation of the spasm, and (4) surgical procedures.

1. *Psychotherapy:*

I believe I have been the first author to point to the frequent purely psychogenic etiology of cardiospasm. In fact, in 1926,[3] I was so convinced of this etiology that I believed that all cases of cardiospasm were of psychogenic origin. Quite typical situations were found to precede the outbreak of the disease picture, especially emotional upset which had to be suppressed, "swallowed down" as it were. One patient, a soldier, was observed who had had an attack of acute gastritis in the first combat line. His staff sergeant, whom he could not contradict, had looked upon his vomiting as malingering, and he then developed the full-blown picture of cardiospasm. Such cases were seen so frequently that I believed I had the right to draw the conclusion that all cases of cardiospasm had a common psychogenic etiology. Already then it was found that the underlying emotional disturbances were not attached to very deep layers of the subconscious and that they very rarely constituted a part of a major psychoneurosis. On the contrary, if present, these emotional disturbances are superficial and easy to recognize. Later I had to revise my opinion substantially.

It is true that some cases of cardiospasm are probably of purely psychogenic origin and—rarely—they are even connected with major psychoneuroses. There are many others, however, in which it is impossible to demonstrate clearly specific psychogenic factors. I have come to the conviction that many cases are of a purely somatic nature, the mechanism of which will not be discussed here. However, the question comes up whether or not some or all of these cases can be treated by psychotherapy. There is unanimity that this is not possible once the disease picture is fully developed. It is true that in the first few weeks simple suggestive treatment or hypnotic treatment may lead to a complete cure in some cases, but later a true conditioned reflex has developed, and psychotherapy then is useless even in cases in which the psychogenic character is manifest.

2. *Introduction of Bougies Through the Spasm:*

Before the mechanical procedures are discussed it should be stated that drugs of every kind are almost useless. Neither antispasmodics nor nitrates have any appreciable effect. Most frequently bougies and tubes of various kinds are used. Simple French elastic bougies may be introduced. Mercury bougies have been recommended, or blunt olives fastened on a whalebone staff. In occasional cases cure may be obtained by these measures, especially if exceedingly thick bougies or olives are used, but in the great majority they effect only a transitory relief. Manipulation in the depth of the dilated esophagus is never entirely devoid of danger and therefore there is no justification whatsoever to retain such unsatisfactory methods if much more successful methods are at our disposition.

3. *Brusque Dilatation of the Spasm:*

The true cures usually are possible only by brusque dilatation. This procedure has sometimes been called "stretching" of the esophagus, an unfortunate term. The fact is that the muscle fibers forming the constricting ring must be forcefully torn apart under the intact mucosa. If one succeeds in doing this, and only then, is an immediate cure without recurrence obtained. Different types of instruments have been described. Most widely used are the pneumatic and hydrostatic bags of Plummer.[2] Fitzgibbon[1] and others which are introduced at the tip of a tube into the cardia and which then are dilated either by inflation of air or by water pressure. Both air and

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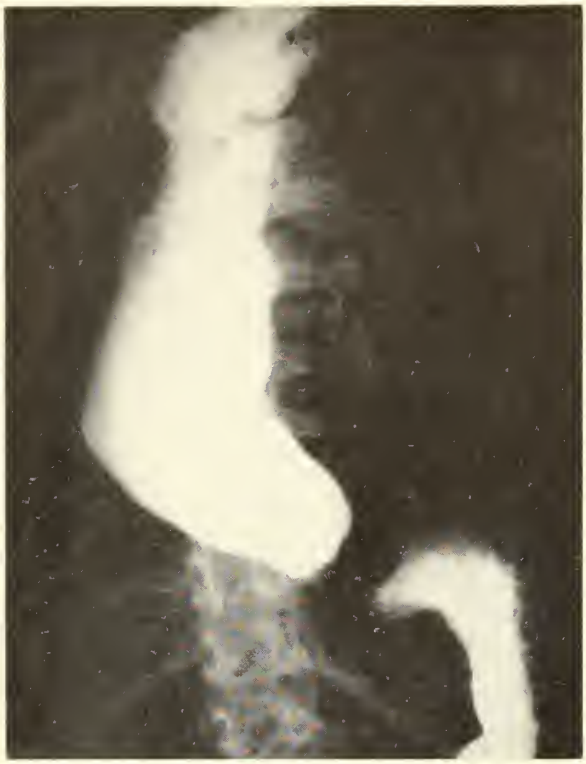


Figure 1.—*Cardiospasm.* Typical x-ray picture. Esophagus dilated and tortuous. Spastic constriction at the level of the diaphragm. Smooth outline of lower end of esophagus. Only small amount of barium in stomach.

water are filled into the bag under controlled pressure. With sufficient dilatation the musculature will rupture and cure will be obtained. The other type of instrument, the one which I personally recommend most, is the metal dilator which in folded condition is introduced so that it lies in the cardia and which then is fully spread in umbrella-like fashion so that its metal branches will brusquely dilate the cardia.

The appealing factor of the first method, that of the collapsible bag, is that its use looks rather simple. After its introduction air or water has to be introduced into the bag and the necessary pressure is simply read from a manometer. This however, involves a certain danger. We have no means of knowing what happens to the tissues in the depth and therefore it is not too surprising that sometimes ruptures of the esophagus occur which lead to death. Manipulation in the depth of the esophagus is always a risky procedure and an expert working with a hydrostatic dilator is certainly less likely to have an accident than an awkward beginner with a metal dilator. Yet I feel that to the expert the metal dilator will have greater appeal because at any moment he is able to feel with his fingers what he is doing in the depth and what resistance is offered by the tissue. In order to have full and gratifying success with either method, slow and deliberate procedure is imperative.

First the diagnosis must be established beyond any doubt. It is true that the x-ray pictures usually are



A B

Figure 2.—*Two different types of cardiospasm.* In the case pictured at the left side the point of constriction is the hiatus of the diaphragm; in the case pictured at the right side the point of constriction is the cardia itself.

characteristic. Such a typical picture is shown on Figure 1. The esophagus is dilated and tortuous, its lower contour is perfectly smooth without any filling defect. It is of great practical importance that there are two different types of cardiospasm. Some authors have contended that the diaphragm itself forms the spastic constriction. Others have contended that the ring of the cardia is the narrowed point. Figure 2 shows that both types do occur. In Figure 2a the barium is stopped within the hiatus of the diaphragm. In Figure 2b the barium fills out the abdominal esophagus and is stopped in the cardia. The dilating instrument must lie exactly within the constriction and therefore it becomes necessary to measure out the exact distance between the narrowed point and the row of the teeth. This should be done under fluoroscopic observation with the dilating instrument itself.

Figure 3 demonstrates the metal dilator. The left side of the picture shows the closed instrument with an elastic rubber attachment, which guides it through the esophagus and through the cardiospasm, and with the handle the compressing of which opens the dilating portion of the instrument. On the right side of the picture the opening mechanism of the instrument is demonstrated. In contrast to scar strictures or tumors of the esophagus, which should be passed only over a thread, no thread is needed in cardiospasm. In true cardiospasm, bougies and instruments will enter the stomach readily. Different attachments may be used, a mercury attachment being preferable in unusually difficult cases. It is clear that such a procedure would lead to disastrous consequences if any organic obstruction is present. By all means organic obstruction must be excluded before a brusque dilatation is carried out. This is not always possible by x-ray.

Figure 4 shows the x-ray picture of a patient referred for treatment under the diagnosis of cardiospasm, and this picture looks indeed rather characteristic. However, the peculiar behavior of the patient, his impatience, his rather uncooperative

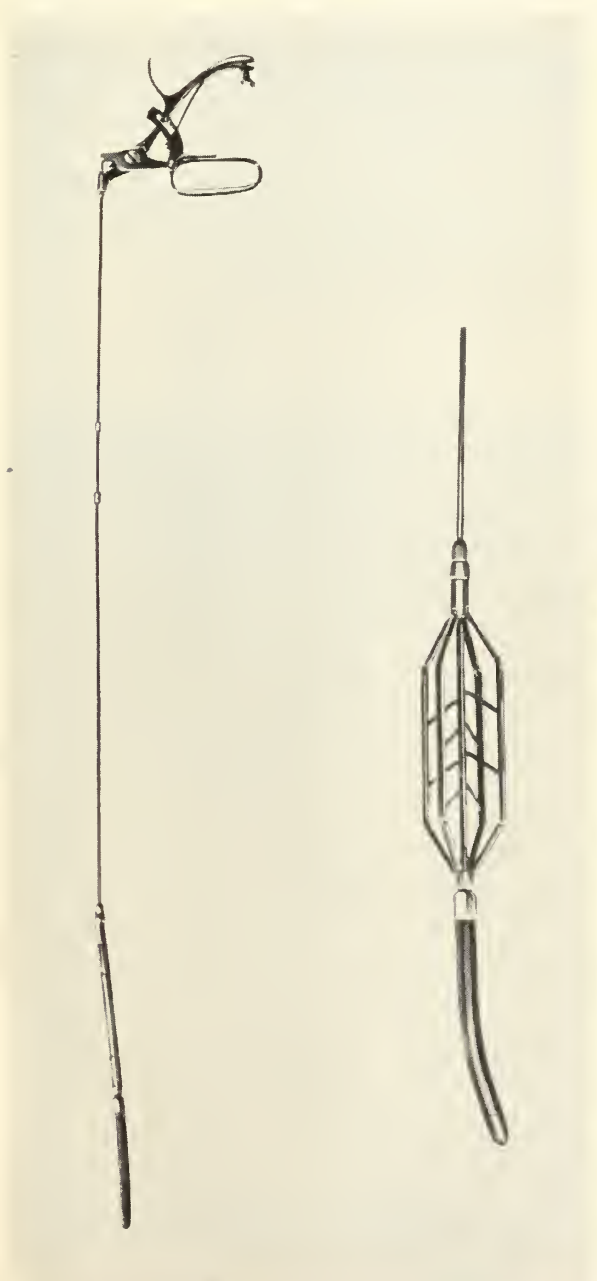


Figure 3.—*Metal dilator for the brusque dilatation of the cardiospasm.* Elastic attachment to the gastric side of the instrument. Dilating mechanism closed in left portion of picture; opened in right portion of picture; handle at upper side of picture permits sudden brusque opening of the instrument.



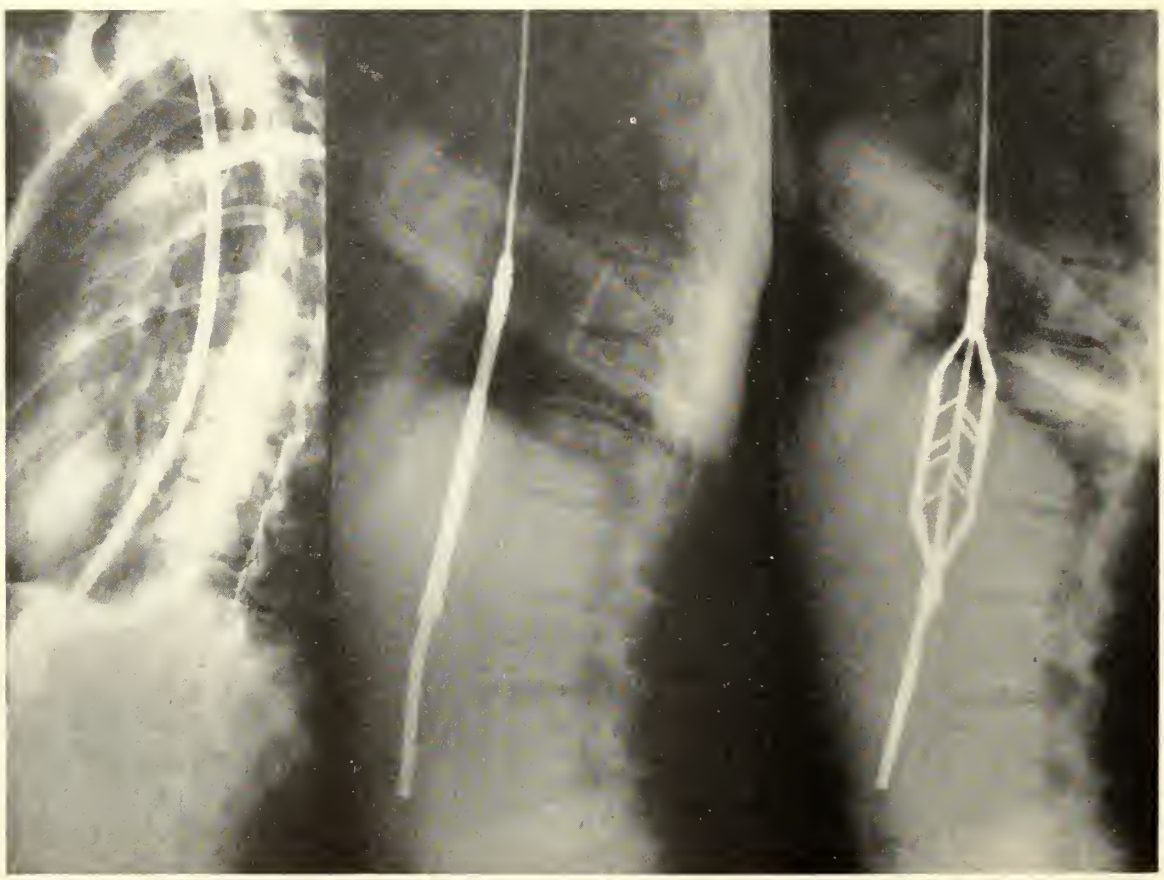
Figure 4.—X-ray picture of obstruction of the cardia simulating cardiospasm. The patient had a carcinoma. (See text.)

manner caused doubt about the diagnosis. Esophagoscopy was recommended and carried out. No organic lesion was discovered. On the whole, gastroscopy is the best endoscopic method for the exploration of a cardiospasm. The dilated bag of the lower esophagus can be observed readily through the gastroscope which then will enter the stomach without difficulty and which will permit visualization of the fornix of the stomach. In the case pictured in Figure 4, the gastroscope at two attempts refused to enter the stomach although a thick bougie did enter. Thereupon the further procedure was given up and the diagnosis held in abeyance. The patient was explored and carcinomatosis of the abdominal cavity was found.

The course of the procedure is as follows:

First the patient is x-rayed carefully, in various directions and under the use of numerous spot films. If then the diagnosis or cardiospasm seems to be fairly well established, he is trained to swallow tubes of different sizes. His throat should be anesthetized before each such procedure, as he will cooperate much more reasonably and quietly if the gagging and retching reflex has been suppressed. Each time, the esophagus should first be emptied through a simple Ewald tube by gravity. This draining of the esophagus permits quiet working which otherwise would be constantly disturbed by vomiting and retching. The possibility of introducing even very large bougies does not establish the diagnosis of cardiospasm beyond any doubt. In the case of carcinoma just described a French bougie Number 45 entered the stomach quite readily.

The next step therefore is gastroscopy. If at gastroscopy no organic lesion of fornix, of the stomach, of the upper lesser curvature of the stomach, of the cardia and of the lower esophagus has been found, the diagnosis finally can be considered as established. The next step is the preliminary introduction of the dilating instrument and the measuring of the distance between teeth and the narrow and obstructing ring before the fluoroscope, a difficult procedure. The patient then is hospitalized after having been prepared for several days with sulfa drugs. His esophagus is washed out and some sulfa drug is injected intravenously. After careful anesthesia the dilating instrument is introduced. Figure 5a shows on the left side a simple Rehfuss tube lying in the esophagus and stomach, with some barium



A B C

Figure 5.—*Brusque dilatation in a case of cardiospasm.* (a) X-ray picture of the patient with Rehfuss tube in stomach; barium indicates the location of the spasm at the cardia below the diaphragm. (b) X-ray picture of same patient, the metal dilator having been brought into the correct location. (c) X-ray picture of same patient. The brusque dilatation being carried out; the branches of the dilating instrument are spread and disrupt forcefully the musculature of the cardia under the intact mucosa.

indicating the place of the narrowing. The dilating portion of the instrument has to lie in this place. Figure 5b shows the closed instrument introduced, and Figure 5c shows the opening of the instrument within the narrowing ring of the cardia.

When this maneuver is executed the patient experiences a sharp pain. The success, however, is not dependent upon the amount of pain the patient feels.



A B

Figure 6.—Patient before (a) and after (b) brusque dilatation of cardiospasm.



A B

Figure 7.—*X-ray pictures of the esophagus in a case of cardiospasm.* (a) Before treatment. (b) After treatment. In this case the esophagus has shrunk to an almost normal size. More frequently it does not return to the normal.

Until a short time ago I was convinced that success could be obtained only when the constricting ring is caught in the condition of spastic contraction. The hand of the operator will feel a most marked resistance which has to be overcome with a certain amount of force and which causes a most disagreeable feeling of tearing apart of tissue. I still feel that usually success is obtained only if this sensation is felt by the hand of the operator, and that if no resistance is felt there will be no success and the procedure has to be repeated in a week or so. In most cases the cure succeeds in one single session. In some additional cases two dilations may be necessary and in one case five sessions were needed until finally the constricting musculature was caught in a condition of spasm. Quite recently however, a case was observed in which the operating hand did not feel any resistance whatsoever and in which, nevertheless, complete cure was obtained.

The patient is observed for one day and when on the next day he tries to eat his breakfast he will be able to swallow without any difficulty for the first time in many years. This success as seen with the eyes of the patient is overwhelming and I do not know of any patient who is more grateful than the patient treated for cardiospasm.

The result is usually a dramatic one. The patient starts picking up weight at once. Figure 6 shows a patient before and three months after treatment. Formerly I believed that in spite of the good results the esophagus would never shrink to normal size again, but more recent experiences have made me more optimistic on this point. Figure 7a shows a case of cardiospasm at the time of the operation. Figure 7b shows the same esophagus eight months later. It has shrunk to about half its former size.

The results are shown in Table 1. One case remained uncured, a 24-year-old girl in whom repeated dilation with every type of dilator was unsuccessful. Unfortunately she had a severe mitral stenosis so that thoracic surgery could not be undertaken. In one case there was a probable recurrence.

A complete success was obtained in 24 cases, which is a total of 92.3 per cent. No fatalities have occurred in this series and only three minor complications were seen. In two cases there was some peritoneal irritation which subsided after two days. The vagus shock observed in another case, lasted only a few minutes.

4. *Surgical Procedures:*

The fourth therapeutic possibility, that of thoracic surgery with esophagoplasty, will obviously become necessary only in most exceptional cases. It may

TABLE 1.— *Cases of Cardiospasm Treated with Brusque Dilatation*

Failure	Probable Recurrence After Cure	Complete Success	Total	Fatalities	Complications: Mild Peritoneal Irritation	Complications: Vagus Shock
1	1	24 (92.3%)	26	0	2	1

be, however, that a patient suddenly gets a complete occlusion so that not even a drop of water may pass the cardiospasm. Then gastrostomy must be performed if no expert is at hand able to carry out the described method of dilatation. In Paris, this writer treated a man who for ten years had been lying in the hospital of Vaugirard with a stomach fistula and who had been fed constantly through this fistula. He was cured by one single brusque dilatation. It is my opinion that we can avoid seeing such cases by the use of the proper procedure.

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California's Plan for the Study and Control of Mosquito-Borne Diseases†

By Lester Breslow, M.D., M.P.H.,* *and* Arve Dahl, M.S. in San. Eng.,‡ *San Francisco*

THE California legislature has initiated an extensive program for the prevention of mosquito-borne diseases by appropriating $600,000 for this activity during the present biennium. In the Act it was recognized that further research is necessary to increase the effectiveness of such work. The purpose of this discussion is to describe the administrative approach to this rather complex epidemiologic and disease-control problem. Results of the first year's investigative activities wait upon laboratory examinations now being conducted.

Written records of mosquito-borne disease in California extend back to the days of '49 when malaria was a scourge. Military reports[2] for July-September 1853 state that the incidence was 816 cases per 1,000 men in Northern California posts. Malaria continued to be a major health problem for decades; as late as 1909, Dr. William F. Snow, Secretary of the State Board of Health, termed it the "minataur" of California.

In 1903, the first mosquito control work in California was undertaken in San Rafael. Sufficient interest was aroused for the passage in 1915 of a Mosquito Abatement District Act which provided that a community could organize its territory into a mosquito abatement district, with funds provided through a tax levy limited at first to 10 cents (now 40 cents) on each hundred dollars of property. During the ten years following passage of this Act, 15 districts were organized and the incidence of malaria dropped 90 per cent—from a case rate of 17.9 to 1.7 per 100,000.

However, another mosquito-borne disease has become prominent in the Central Valley. Encephalomyelitis was first recognized there in 1930 when approximately 6,000 horses and mules were affected, with a 50 per cent mortality. The malady reappeared in subsequent years. Meyer, Haring, and Howitt[3] reported the isolation of a virus as the etiologic agent which later became known as Western equine encephalomyelitis.

Human encephalitis in California, following World War I, occurred primarily in urban areas and during the winter months. It declined to a low point in 1933. Thereafter, the reported incidence of encephalitis began to rise again but the character of the disease was quite different: it was largely a summer disease and appeared in the same rural areas where equine encephalomyelitis was known. Studies[1] proved that the Western equine and St. Louis viruses cause human as well as horse disease and that mosquitoes are a vector. One thousand, three hundred and eighty-three human cases and 453 deaths were reported during the ten-year period 1936-1945. The state was also faced with a possibility of serious human outbreak, such as the midwestern experiences, and the possible importation of Japanese B encephalitis.

Besides the concern with this disease picture, water and power development and expanding

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irrigation areas were constantly adding new elements to the mosquito control problem. There was also a popular fear of the spread of malaria from returning veterans.

RECENT LEGISLATION

With the above considerations in mind the State Senate asked for a report by the Department of Public Health on the disease-bearing mosquito hazard in California. Following submission of the report the Legislature in 1946 enacted a bill "to provide State Assistance of local agencies for the control of mosquitoes," on a 50 per cent matching basis. The Department of Public Health was authorized to "enter into cooperative agreements with any local district or other public agency engaged in the work of controlling mosquitoes . . . under such terms . . . as the State Board of Public Health may prescribe." Of the $600,000 appropriated, it was specified that not more than $200,000 was to be spent for studies, demonstrations and administration.

In order to clarify the detailed operations of this program, it is necessary to mention that the California State Department of Public Health includes five divisions—Local Health Services, Administration, Preventive Medical Services, Environmental Sanitation and Laboratories. Bureaus of the latter four divisions all participated in the study program to be described below.

SUBVENTION PROGRAM

The Mosquito Control Section of the Division of Environmental Sanitation was assigned responsibility for allocating the subventions. A staff of engineers and entomologists was assembled to carry out the program and an Advisory Committee established with representation from the University of California, the Hooper Foundation, local health departments and mosquito abatement districts, to assist in establishing criteria for alloting funds.

In applying for funds, a district was required to submit a statement on the prevalence of malaria and human and equine encephalitis, to prepare a map of the district showing cases of the preceding five years and the proposed disease-control area, to present a budget, and to state the qualifications of the person having technical responsibility for the program. The applications were, of course, designed to emphasize the disease-control aspects of mosquito abatement and to bring the districts into close relationship with the health departments. Criteria for allotment of funds included extent and severity of the disease problem and known prevalence of vectors.

The premise of his program is that mosquito control offers the most promising approach to the control of encephalitis, as well as of other mosquito-borne diseases.

Staff members of the mosquito control section assisted the districts in formulating their applications, expanding their programs in accordance with the latest epidemiologic information and developing entomologic controls for their work.

STUDY PROGRAM

In spite of the strides made during the past decade, our knowledge of the epidemiology of encephalitis has numerous gaps. Are there any reliable clinical differences between encephalitis and nonparalytic poliomyelitis? In recent years, comparatively few cases clinically appearing as encephalitis have been proved due to any of the known viruses. Are other agents involved? From what host does the mosquito acquire the virus and how does the virus persist through the winter? Which of the mosquitoes already implicated is most important, and are there others? What is the most economical way of destroying the known vectors?

In an effort to get further data on these questions, the State Department of Public Health created an intra-departmental committee. Representatives from the fields of epidemiology, veterinary medicine, virology, engineering, entomology, statistics and health education contributed to the plan and met bi-weekly during the season to check on its implementation. This served to bring persons with varied responsibilities into effective cooperation for this one activity.

Before the seasonal rise in incidence occurred, an educational campaign was conducted in order to acquaint appropriate persons with the study and to gain their cooperation. The campaign included visits to mosquito abatement districts, health officers and hospitals, addresses to medical societies, personal contacts and addresses to veterinarians, articles in rural newspapers and journals, and radio programs.

In charge of the office from which the study project operates was placed a statistician who also had responsibility for the development of suitable records.

Health officers report human cases by telephone or teletype. Telephone communication is maintained with epidemiologists in the field who investigate each case. Equine cases are similarly handled, being seen by the veterinarian on the staff. Blood and tissue specimens are submitted to the virus laboratory. All cases are referred to the Mosquito Control Section for entomologic observations.

To indicate the volume of field work this first summer, it may be mentioned that detailed epidemiologic histories were obtained on 136 human and 90 equine cases, and 380 blood and tissue specimens secured from these cases.

In addition to the investigation of equine and human cases, two other field studies were undertaken. One was the collection of suspected vectors and suspected reservoir hosts. A mobile laboratory unit secured specimens from 675 birds and animals, including wrens, owls, pheasants, mud-hens, finches, squirrels, gophers, field mice and many other species. The second project was to study mosquito ecology and to evaluate various methods of control.

Besides these activities of the State Department of Public Health, it should be noted that the fundamental studies of the Hooper Foundation were continued in Kern County, this year, with partial subsidization from the State funds. In several respects, the model for the state program had been established by the Hooper Foundation in previous years.

Although the concentration was on encephalitis, malaria was not overlooked. Data were routinely secured on probable source of infection and preparations were made for investigating any outbreaks. None have occurred as yet.

PROGRESS

Following passage of the legislation, a technical staff of 17 people had to be assembled and trained, the program defined and field work conducted. Investigative results will be reported after completion of laboratory work.

However, certain administrative accomplishments may be mentioned. Of the $400,000 available for subventions to abatement districts, $358,613 has already been allotted. Area covered by mosquito abatement districts in the state has been increased from 4,645 square miles to 10,927 square miles. In addition to this extension of mosquito control activities, the quality of work has been improved by emphasis on disease-prevention aspects, by stress upon adequate technical supervision, and by demonstration of new methods.

Wider recognition of the services of the virus laboratory has been reflected in the greatly increased numbers of specimens submitted by practicing physicians and veterinarians. Clinical consultation service has been well received and has probably enhanced the reliability of reported incidence of neurotropic virus diseases—both human and equine.

The liaison established between the Department of Public Health and veterinarians holds the promise of collaboration against other diseases of mutual interest such as rabies and brucellosis. Steps in this direction are now under consideration.

In summary, it may be stated that a start has been made in applying all the resources of the State Department of Public Health toward the solution of the problems involved in the eradication of mosquito-borne disease, in accord with the present trend toward collaborative research.

As a pattern of intra-departmental organization, the encephalitis program offers an example of planning and carrying out an extensive project involving laboratory, epidemiologic, environmental sanitation, statistical and health educational services. A similar pattern is expected to prove useful in attacking murine typhus, relapsing fever, brucellosis and other diseases.

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Some Features of Psychiatric Practice in Postwar Medical Care Planning*

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RECORDED history reveals that in the wake of war, man's confidence in mankind's intent to cooperate—individually or internationally—invariably diminishes and the feeling of guilt and distrust between men mounts. The present postwar period already contains ample evidence that these days are not to bring an exception.

Fragmentary reports of the state of mind, both singly and in the congregate, of those in defeat appear to indicate several clear-cut characteristics which are at variance in degree only with characteristics to be observed in the state of mind of those round about us and in victory. Briefly, these characteristics are:

1. *Despair*—be it of food or shelter or economic security or political expression or domestic compatibility.
2. "*Shock*"—be it in relation to an episode or a benumbing drift, wherein the individual (or his group) is dazed or absorbed in a day to day existence and permits or expects others to assume responsibility for his survival and also to provide a directional force to his liabilities.
3. *Disillusionment*—in goals, in principles and in people.
4. *Hatred*—which may be so diffuse and unfocused that it is taken out on anybody or on everything.
5. *Shame (or Guilt)*—wherein assault and truculent attitudes compulsively serve as a disguise and everybody or anything becomes a potential target. (On the battlefield, and whether or not in association with guilt, this characteristic is capitalized upon in the strategy of "the best defense is to attack and then to attack again and again.")
6. *Fear*—that is cloaked in uncertainty, with its resultant—a truncated morale.

The reactions to these characteristics are well known to those of you in clinical practice. For orientation purposes only and without further comment they may be listed, too, as: (1) Callousness; (2) Deception; (3) Demoralization (planlessness); (4) Docility ("vacuity")—intellectual, moral, politic, etc.; (5) Self-pity.

Although we see these characteristics of the state of mind in our erstwhile enemies, in the reactions to those characteristics we now observe much of ourselves. This universality of the characteristics of mental life in the wake of war, in the enemy or the ally, and the limited but far-reaching reactions in people or in governments to those characteristics must be respected and sharply observed in whatever program the practice of psychiatry is to function. The implication is plain: a broad basic interpretation of psychiatric concepts (with supplemental coloration by neurology and psychoanalysis), unidentified with a clinic *per se* or diagnostic pathologic analogies, must be repeatedly offered to the *mass* population which is distraught not only by personal aberrations but also by economic insecurity, political intrigue and feelings of religious betrayal.

Psychiatry is being widely heralded through the periodicals, the press, the movies and the radio. On the whole, it may be contended safely that much that is presented is good rather than bad, and that the public's reaction to it is generally favorable. There is grave doubt, however, that other professions are as favorably disposed. And though it is evident that extensive interest in psychosomatic medicine, in geriatics, in anthropologic research and in socio-economic analyses may assist psychiatry to become free and untainted to men at large—there are such indications here and there—nevertheless, increased unchecked alcoholism, extensive sex irregularities, and grossly compromised family patterns may serve to fetter psychiatry with even greater stigma than it has formerly known.

Today in California a great impetus to professional standing and training has been given by the establishment of the Langley Porter Clinic in San Francisco and by the extensive practical revision of the program of the Department of Mental Hygiene. There are other signals too—though not many—that a few short progressive strides will be tried, albeit hampered by slender budgets. These hopeful signs are referred to in order that we may not be too discouraged that the mill still grinds exceedingly slow.

Psychiatric practice, if it be such, must broaden to be more widely available and accessible to vocational placement and family counseling. Four features of family life in America that have immeasurably altered the home and child rearing should be seriously studied and appraised by psychiatry for their emotional impact alone on personal adjustment. This should be done either in close cooperation with case work or nursing care or health insurance or court action. The four features are:

1. Increased mobility and unrest.
2. Reduction in number of offspring, giving par-

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ents more free time and therefore: (a) a feeling of duty to inform themselves as to child development and training, (b) an obligation to apply the information, and, hence (c) a greater sense of guilt if they should fail in that obligation.

3. Emancipation of womanhood with its higher education status and its keener occupational rivalry not only with men but also with its own.

4. Impact and influence of fourteen and more millions of ex-service personnel conditioned to rank, prerogatives, authority, rumor, indulgences, "gripes," and congregate rivalries—all specific and to a high degree foreign to civilian life.

The impact of the ex-serviceman and its effect upon his kin are not restricted to the home; they extend also to industrial output and community planning. These men and women of the services speak out bluntly about psychiatry when counseled apart and away from signs of authority. The psychiatrists' rôle at selection and induction: what the chaplain has advised; what the field representative of American Red Cross or a USO volunteer has said; what the medical officer has inferred—all this has given a tint to psychiatry that is not bright. Disciplinary hearings and military police supervision and courts martial decisions far away from the simplest psychiatric tolerance are other factors operating detrimentally. Still others are the psychiatric interviews, however skillful or adroit or however leisurely conducted, that left the serviceman stuck with a coded diagnosis, or sent him out again into action, or rushed him back from the front to be discharged with a marked form to confirm to all that his signs of maladaptation were traceable to infancy or puberty or both. Moreover, if a veteran is left abandoned to a generalized policy of medical care in which every disability or symptom is evaluated alongside the possibility of claim for monetary compensation, or if standing in line-ups or in bureau waiting rooms with other veterans convinces him that his medical care is comparative and he must compete for it, or if even excellent treatment is permitted to lapse and delays occur which permit him to "shop about"—then he is likely to reach such an attitude as to make the application of psychiatric principles practically impossible and even to be looked upon as ridiculous.

Another barrier to the veteran's acceptance of the value of psychiatry is that in the armed services, shackled by countless administrative tasks or sitting in perfunctory review board hearings, psychiatrists grow weary and are not regarded at their optimal best.

Civilian attitude toward psychiatry will have much to do with its acceptance by the veteran. Few veterans will utilize psychiatric services constructively or with assurance unless these same services are observed to be widely applicable and extensively used by civilians. If a veteran does avail himself of treatment and the civilian population has a scoffing attitude toward psychiatry—especially psychoanalytic psychiatry—then he will feel that, even though benefited by the treatment, he is further stigmatized.

Several bills before Congress (if they are enacted), as well as the Dean's Committee plan of the Veterans Administration and other current proposals, may help to clarify within the next decade some of the drawbacks from an overall psychiatric point of view which are perpetuated at the colossal and pagan shrines to the Goddess of Insanity.

The solution to most conduct problems is not in the acquisition of an increased academic knowledge. Instead, if properly analyzed, it is found to rest in the adaptability that comes from close living with mature and reliable adults who have themselves lived widely, tolerantly and courageously, and who have compensated constructively for their many errors. Therefore, a comprehensive program of psychiatric concepts should be first introduced—in early life—through public health organizations and the more progressive channels of education and welfare.

Since children in America are becoming more freely expressive, since adults are becoming more sensitized to early signs of distress and since our detection devices for those in difficulty are being perfected, it can appear that our conduct problems are on the increase. There is so large a backlog of undetected problems that an initial upsurge of additional problems, rather than an abrupt diminution, should be anticipated from the first. In the public domain, this one feature of administrative planning—more revelation and less resolution of problems initially—perplexes the legislator and pleases the contrarily scheming politician more than any other single factor. But to temporize or to defer action in the face of need for action—though this might be politically strategic—is to expose a compromising weakness that even today's psychiatric techniques, advanced and promising though they may appear to be, cannot neutralize nor hope to excuse. For as the alleviation of malnutrition and the widespread control of disease and pestilence have become global, albeit self-protectively, and the application of known public health protective devices ever so alertly introduced into every cabin, so too must psychiatry envisage a broader rôle and become extremely sensitive to all human conduct, at home and internationally. To lessen infant mortality and to extend the life span for humans, all in one generation, and not be concerned over the more and greater hardships those humans will be called upon to endure, is the seduction of scientific principle of the worst order.

To be structurally sound, any community-wide planning for psychiatric interpretation and service should be founded upon a broad base. It cannot limit itself to the analysis and the solution of problems. Such planning should recognize and emphasize the revolutionary changes in American family life which are now taking place, and the obsolete American school patterns which are now latent, and the aspects of both which contradict rather than complement one another. Finally, the professions, too, must be brought to awareness of their own inherent conflicts and limitations which tend to obscure mutual respect and resources.

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Official Medical Investigation of Deaths in Behalf of Public Welfare

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EVERY 30 minutes there occurs somewhere in California a death from causes or in circumstances such as to require a prompt and competent official medical investigation in the interest of public welfare. Approximately 18,000 such deaths occur in the state each year.

What kind of deaths are these that require investigation in the public interest? Why is it essential that they be investigated officially? How well are they investigated in California?

Deaths that require investigation in the interests of public welfare fall into two principal groups. One comprises the unexpected or sudden deaths of persons who were not previously recognized to be suffering from dangerous or disabling disease. The other group includes all deaths known or suspected to have resulted from violence of one kind or another. Together they comprise approximately 20 per cent of all deaths that occur.

Any unexpected death from obscure causes may turn out to have resulted from violence. Competent investigation of such cases frequently discloses not only that death resulted from unsuspected physical or chemical injury but may also provide sufficient information to establish the probability of accident, suicide or murder. Another possibility is that any unexpected death from unknown cause may be found to have resulted from some form of rapidly fatal communicable disease that constitutes a particularly dangerous threat to public health so long as its identity remains obscure.

How often does the investigation of sudden deaths from obscure causes disclose information of importance to agencies responsible for law enforcement or public health? Is it worth the cost and trouble?

In areas where such deaths are routinely investigated through a competent medical examiner's office there is ample evidence that the cost is small in comparison to the service rendered. Routine investigation reveals that between 5 and 10 per cent of such deaths result from entirely unsuspected violence of one kind or another. Sometimes the injury or intoxication responsible for death is such as to indicate the probability of accidental incurment. When such is the case, heirs of the decedent are often enabled to claim compensation that they would otherwise not have received. In many instances knowledge of the cause of the death makes it possible to take steps to prevent others being similarly injured.

Not infrequently death is found to have resulted from a murder that would otherwise have escaped recognition. Even though the investigation discloses that death resulted from natural causes, it is by no means uncommon to find that it was due to some unsuspected communicable disease. In such an event the investigation provides the health authorities with information that may enable them to take immediate action to stop the spread of the infection.

Why is it desirable that such medical investigations be conducted by a public official rather than by a private physician? A procedure that is undertaken in behalf of public safety and one that is often responsible for securing evidence that may provide proof of the guilt or innocence of persons suspected of murder is a function of government. It must have legal authority and it must be beyond suspicion of partisanship. It should be conducted with the highest possible degree of competence.

What kind of official investigation would have been made of the death of Timothy Burke† if it had occurred in an average medium sized city in California? Burke worked in a small factory and one of his duties was to degrease small metal parts by passing them through a solvent. One Sunday morning he wakened with what seemed to be an attack of flu. By night he was very ill. Monday morning a physician was called who found Burke anuric and jaundiced and advised immediate hospitalization. By Monday afternoon Burke was in coma and that night he died.

The case was referred to the medical examiner's office on the grounds that death had occurred unexpectedly (within 24 hours) from obscure causes. An autopsy was performed and established that Burke's death was due to the inhalation of a hydrocarbon solvent that he had used for the first time during the last week that he worked. As a result of the investigation the use of this solvent was abandoned until more effective protective measures could be installed and further exposure of workmen to it was prevented. Burke's wife received full indemnification for his death through Workmen's Compensation Commission.

Would the coroner's office as it operates in the average California community have afforded this kind of protection to the fellow employees and widow of the deceedent?

What kind of investigation would have been made of the death of Mary Jones if it had occurred in a small town in California? Mary was four years old and was cared for during the daytime in a

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† Although this and the other cases cited are authentic, the names are fictitious.

small nursery school operated for the benefit of mothers who were away from home during the daytime. At about 4 o'clock in the afternoon Mary came in from play and complained that she did not feel well. Half an hour after eating a light supper she had an attack of vomiting followed by a convulsion. A doctor was called who said that he would be somewhat delayed in getting there but to put the child in a warm bath if she had any more convulsions. By 7 o'clock there were more convulsions and the parents started with the child for the nearest hospital, where she died in the admitting room. The parents volunteered that Mary had always been healthy but that for several days preceding her terminal illness had seemed to have a slight cold with some sore throat.

The case was referred to the medical examiner's office as an unexpected death from obscure cause. Investigation disclosed that Mary had died of acute meningococcemia. Prompt bacteriological investigation in collaboration with the local board of health disclosed that the type of organism responsible for Mary's death was identical to one that was recovered from a culture of the throat of the woman who operated the nursery school. The school was temporarily closed and appropriate measures were taken to prevent the spread of the infection. There is every reason to believe that the investigation of Mary's death saved the lives of other children and contributed importantly to the suppression of a dangerous epidemic.

How frequently do murders successfully masquerade as deaths from natural causes in California? Under California's present inadequate coroner's system a homicide rate of approximately 500 per year is reported. There are many kinds of fatal physical or chemical injuries that leave no external disturbances to indicate their presence. There are many communities in which a death would probably be certified as due to natural causes if (1) the fatal attack and death were unwitnessed, (2) if the body were found in a place where it might normally be expected to be, and (3) if there were no external evidence of injury. It is a reasonable inference that there are many communities in which murder would pass unrecognized if there were no external marks of violence. Certainly there are many ways of killing people that do not produce visible wounds.

Would the death of William Snow have been recognized as murder had it occurred in an average community in California? Snow was a middle aged bachelor who lived alone on a small plot of ground at the edge of a village. He did not have a telephone. A neighbor on a mid-afternoon errand found Snow lying partially clothed on his bedroom floor and was unable to rouse him. A physician was called who ordered him removed to a hospital where death occurred six hours after admission with a presumptive diagnosis of meningitis. No external evidence of injury was noted and no history was available.

The medical examiner's office took jurisdiction and found that Snow's meningitis was due to a stab wound of the head that had been made with some long slender instrument like an icepick. The wound in the skin was so small and so covered by hair that it had escaped notice. Subsequent investigation by the police led to the discovery of witnesses whose testimony eventually led to the apprehension of the murderer.

The foregoing cases are by no means unusual. They should suffice to establish the fact that no community can afford to ignore deaths from obscure causes on the presumption that such a death does not deserve official inquiry unless there are positive grounds for suspecting criminal violence.

Attention has been called to the fact that in addition to the sudden death from obscure causes another 10 per cent of all deaths are known or suspected to have resulted from violence. The reason for making a detailed postmortem investigation if death by violence is suspected but not proved is apparent. What justification is there for performing a compulsory postmortem examination if the cause of death is already apparent?

Mrs. Whitby was found dead in the woodlot behind her house with a through-and-through gunshot injury of the neck. There was no doubt as to the cause of death. The bullet had passed through her body and was no longer available for examination. It was learned (1) that Mr. Whitby had motive and opportunity to kill his wife, (2) that several days before the shooting he had borrowed a high velocity rifle and ammunition from a friend, and (3) that he lied to the police interrogator as to his whereabouts on the day of his wife's death.

What could further examination of the body be expected to contribute to the ends of justice? An autopsy was performed and small flakes of metal were found on the margins of a smashed vertebra. Analysis of these traces disclosed a type of alloy that was entirely different from that of the only ammunition that Whitby could have used. This evidence established beyond reasonable doubt that Whitby did not fire the fatal bullet. Weeks later it was discovered that her death was accidental and had been caused by a random shot fired by a deer hunter who was too frightened to report the accident when he discovered what he had done.

How well do the existing laws and practices pertaining to the coroner's office of California provide for a competent medical investigation of deaths in the interests of public welfare? In a recent survey of the problem by a joint committee of the American Medical Association and the American Bar Association it was concluded that throughout most of the United States medical science participates less effectively in the administration of justice than it does in any comparable country in the world. It concluded furthermore that to function effectively the office of coroner or medical examiner should have a professional and technical personnel (1) that is selected for and retained in

office under some form of the merit system, (2) that is compensated at a rate sufficient to attract persons of high professional caliber, and (3) that is routinely notified of and empowered to investigate every death due to violent or to obscure causes.

The survey disclosed that the cost of maintaining such a service in metropolitan areas is not significantly greater than that of the average coroner's office and should probably be between 4 and 6 cents per capita per year. It was found that the inability or unwillingness of communities to provide for a competent medical agency for investigating deaths due to violent or obscure causes predisposes to: (a) Non-recognition of murder; (b) unjust accusation of innocent persons; (c) improper evaluation of medical evidence bearing on the circumstances in which fatal injuries were incurred; (d) failure to acquire medical evidence which would be useful in the apprehension of criminals; (e) failure to acquire medical evidence essential to the administration of civil justice; (f) ignorance of certain otherwise preventable hazards to public health, and (g) the impairment of the value of vital statistics.

It would appear to be incumbent on the physicians of California to scrutinize the manner in which medical science is being utilized to investigate deaths in the interests of justice and public health and to take such steps as may be necessary to bring this important professional activity to a plane comparable with that of other forms of medical practice.

Parenteral Fluid Therapy During Prolonged Surgery*

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EXPERIENCE at an Army hospital in the zone of the interior where many surgical procedures were long, and the problems of dehydration and blood loss therefore intensified, emphasized the importance not only of careful supervision of supportive parenteral fluid therapy by the anesthesiologist but of a readily available blood bank and the advisability of forehanded preparation of the patient for transfusions.

Since a potentially dangerous loss of fluid is to be expected in long operations, this discussion concerns the prevention of dehydration, the use of saline solutions and plasma as temporary blood substitutes, and massive transfusions of whole blood during protracted surgery.

LITERATURE

One of the greatest problems for the anesthesiologist during prolonged surgical procedures is the fairly accurate estimation of the progressive blood loss and the evaluation of its immediate significance. There is no single reliable test or clinical sign of impending shock, especially in anesthetic and post-anesthetic states. Our conception of the amount of blood lost in the course of a given operation may be obtained by reviewing the studies of Coller,[4] and Gatch,[5] and others.[6, 7, 8] In 1924 Gatch and Little[5] reported the first study of blood loss during some of the more common operations in general surgery in which accurate measurement of the losses were made. Everyone who has done such studies has been impressed that the blood loss at operation is often several times greater than that estimated by the surgeon. This is particularly true of the constant ooze of blood from large vascular fields during difficult dissections. Alexander Blain[3] in 1929, in commenting on his experience with 3,000 transfusions, urged the preoperative correction of anemia and the immediate replacement of blood lost during operation and condemned delaying blood transfusions until after shock had developed.

Concurrently with the blood loss determinations, Coller and his associates[1] made observations of changes in hematocrit, hemoglobin and plasma protein concentration before, during, and after operation. They found no correlation between the amount of blood lost and simultaneous changes in hematocrit, hemoglobin and concentration of plasma protein immediately before and after operation, and concluded that these determinations cannot be used to estimate the need for blood volume replacement during and after operation. Obviously, if one wishes to know precisely the amount of blood lost in any operation one must depend on direct measurement. Since this is not practical, one must rely primarily on a knowledge of average losses to provide a basis for the replacement of blood loss during operation. Coller[4] further emphasizes that all loss over 300 cc. in healthy adults should be replaced and that all blood loss in operations on aged, undernourished, seriously ill or bedfast patients should be replaced with equal quantities of blood.

In Table 1 is shown the blood loss during operation studied by Gatch and Little.[2] Table 2 shows the blood loss in operations of various kinds in

* Read before the Section on Anesthesiology at the Seventy-fifth Annual Session of the California Medical Association, Los Angeles, May 7-10, 1946.

626 cases compiled from the literature by Coller and his associates.[4] Table 3 presents the blood loss during operations reported by Coller.[4]

Coller believes that not enough emphasis has been placed on the relation of the amount of blood lost to the total blood volume. He further points out that since the blood volume varies with the weight of the patient, it makes a vital difference whether a given amount of blood is lost from a large adult or from a small child. In Table 4 are shown some figures illustrating the relationship of a 100 cc. blood loss to the blood volume in patients of differing weights. A simple method of calculating blood volume is to allow 35 cc. of blood for every pound, or 75 cc. for each kilogram, of body weight.

In 1943 Frederick Allen[2] advanced some thought-provoking views regarding the use of large saline infusions intravenously as a temporary means of maintaining an adequate blood volume, compatible with life. He pointed out that in hemorrhage, just as in other forms of shock, there is an alteration of such a nature that large saline infusions are not quantitatively lost from the blood stream within 24 hours as they are in normal animals but on the contrary they may provide a volume of dilute blood sufficient to maintain life for hours or days. Thus plain physiological saline solution, when given in sufficiently large volume, may preserve life through an emergency or shock period until it is possible to obtain blood for transfusion.

TABLE 1.—*Average Blood Loss During Operations Studies by Gatch and Little*[5]

Appendectomy, McBurney	7 cc.
Thyroidectomy	208 cc.
Radical breast	710 cc.
Laminectomy, fractured spine	672 cc.
Nephrectomy	816 cc.
Hysterectomy	232 cc.
Cholecystectomy	87 cc.

TABLE 2.—*Blood Loss in Operations of Various Kinds in 626 Cases Compiled from the Literature by Coller et al.*[4]

Operations	Number of Cases	Blood Loss: Maximum, Cc.	Blood Loss: Minimum, Cc.	Blood Loss: Average, Cc.
Brain	30	2,150	487	1,084
Postganglionic neurotomy (trigeminal)	4	650	86	337
Spinal cord	7	1,264	107	626
Thyroidectomy	29	1,118	16	237
Other neck operations	3	410	105	230
Mastectomies, radical	20	1,272	254	732
Mastectomies, simple	5	220	180	200
Thorax	113	2,895	35	575
Splenectomy	2	990	160	525
Intestinal above sigmoid	11	230	10	81
Appendectomy	14	62	4	13
Sigmoidal, rectal, and anus	21	1,220	8	377
Hernia	13	306	11	74
Miscellaneous abdominal	6	546	14	218
Pelvic	30	680	22	266
Prostatic resections, transurethral	220	1,254	4	280
Kidney	10	1,144	130	372
Orthopedic	31	1,564	40	441
Stomach	41	650	45	233
Biliary tract	16	400	51	100

POSSIBILITY OF EXCESS OF SODIUM CHLORIDE

With the administration of sodium chloride, there is the constant potential danger of overestimating the bodily need for sodium. Such an excess of sodium chloride often results in fluid retention and in a urine volume that is extremely small in proportion to the fluid intake. It must be remembered that pulmonary edema is an immediate danger whenever parenteral fluids are given in excessive amounts or at an excessive speed. Allen[2] admits this danger, but believes that when a patient is suffering from the dangerous anoxemia associated with an inadequate blood volume following hemorrhage, life-saving intravenous administration of huge volumes of normal saline solution should be rapidly given until whole blood becomes available. Pulmonary edema may be combatted if and when it arises, but the inadequate blood volume with

TABLE 4.—*Relationship of Blood Loss to Total Blood Volume*[4]

Weight (lb.)	Total Blood Volume (cc.)	100 cc. Loss Expressed as a Percentage of the Whole
10	450	22.0
20	890	11.0
40	1,600	6.2
80	2,825	3.6
140	5,000	2.0
200	7,000	1.4

TABLE 3.—*Blood Loss During Operations Studied by Coller et al.*[4]

Operations	Number of Cases	Blood Loss: Maximum, Cc.	Blood Loss: Minimum, Cc.	Blood Loss: Average, Cc.	Total Volume %
Mastectomy, radical	4	1,091	529	821	17.7
Thyroidectomy	8	725	99	379	11.7
Biliary tract, secondary and plastic	8	1,455	158	594	14.6
Rectal, combined abdomino-perineal	12	686	183	410	9.5
Stomach, complicated	3	804	321	599	13.6
Chondroma, presacral	1			1,257	39.6
Thyroidectomy, intrathoracic	1			1,397	20.6
Sarcoma of shoulder and hemiscapulectomy	1			857	22.9

its resultant anoxemia must be first improved.

Adams and his coworkers,[1] who studied the problem of citrate intoxication in massive transfusions of whole blood, concluded that it would be practically impossible to duplicate clinically in man the rapid rate of administration of citrated whole blood or plasma necessary to result in citrate intoxication, since this would necessitate the giving of over 4,000 cc. of blood to a 70 kg. man during a five-minute period. Thus they demonstrated that a large margin of safety is present in massive transfusion of citrated whole blood or plasma when the administration is at a maximum rate currently employed in man (1,000 cc. per hour). They found that calcium gluconate was very effective in preventing or alleviating citrate intoxication when very large doses of citrate had been administered during a short period of time.

PRESENT STUDY

The situation encountered at an Army hospital offered unusual opportunity for observations on the problem of blood loss and replacement during operations, in that a large percentage of the cases were those requiring the notoriously long reconstructive surgical procedures. Of 2,602 operations performed between August 1, 1944, and August 1, 1945, 710 lasted longer than two hours and 84 of these took over five hours.

As preface to a relation of experience with these cases, it is noteworthy that the patients for the most part were in excellent physical condition. Their average age was 27 years and they were in a good state of nutrition, as they had convalesced from the fatigue, exposure, malnutrition, shock, and acute infection commonly encountered in forward medical units. Hence it may be assumed that measures found advisable with these patients are even more applicable, in long surgical procedures, to civilian patients, whose condition generally cannot be expected to be as good as that experienced in military personnel.

In reviewing experience in protracted surgery cases in the Army hospital, it should be pointed out that water is available for kidney secretion only after the skin, lungs and intestinal tract have taken up their prior rights. In prolonged operative procedures, in addition to the normal insensible loss of water from the skin and lungs, a surgical patient who is draped in the usual manner with sheets and towels and is under the rays of a battery of operating lights suffers an enormous fluid and salt loss during a five to ten-hour operation. In an Army hospital, this loss was particularly marked during the summer months when the temperature in the operating rooms, none of which were air-conditioned, often ranged between 90 and 100°F.

Loss of water by these avenues during a long procedure becomes all the more important because there is usually a deficient fluid ingestion throughout the immediate preoperative and operative period. This deficiency was anticipated and its effect lessened to some extent by forcing fluids whenever possible during the 24 hours preceding the immediate preoperative period, although the common preoperative order, "nothing by mouth after midnight," before general anesthesia was followed to safeguard against the aspiration of vomitus during the induction period.

During operative procedures, salt and dextrose solutions were found primarily useful for the correction of dehydration. They were not considered very effective as blood substitutes, as the elevation of blood volume and blood pressure through their use was looked upon as transient. Administration of salt and dextrose solutions by the intravenous route rather than by hypodermoclysis is preferred now that the problem of pyrogenic reactions has been successfully solved. Fluids administered intravenously are immediately available to the entire body, whereas the absorption of those given by clysis is slow and variable. The amount of these solutions given during an operation must depend upon the estimated loss of water and sodium chloride from the body. Usually in a five to ten hour operation during the summer months, it was found advisable to give three to five liters of solution intravenously. Of these, two to three liters consisted of 5 per cent dextrose in distilled water.

While no effort to satisfy caloric, protein and vitamin requirements was considered necessary during an operation, it was concluded that this should be included in the preoperative and postoperative care. Recently, amigen and nutramigen solutions have been used in increasing amounts both preoperatively and postoperatively in gastro-intestinal cases.

Although at first there was no blood bank at the Army hospital where these studies were carried out, it soon became apparent that such a facility was almost a necessity in order to insure immediate availability of blood in large amounts during operations on aneurysms, brain and spinal tumors, and extensive bone defects. One ten-hour operation, the transplantation of both ureters, required meticulous dissection of structures in a densely scarred and highly vascular field. During the procedure, three and a half liters of whole blood as well as two liters of liquid plasma, three liters of physiological saline solution, and two liters of 5 per cent dextrose in distilled water were given—a total of ten and a half liters of parenteral fluids in ten hours. Indicative of the extent of blood loss, the patient 48 hours later was found to have a value for hemoglobin of 48 per cent and 2,420,000 red blood cells, as compared with 109 per cent and 5,580,000 preoperatively. The plasma given to this patient was used as a blood substitute during the period when additional blood was being typed, crossmatched and drawn. This and similar cases demonstrated the need for a local blood bank, which was then established.

It was most reassuring to have the patient crossmatched with four to six bottles of bank blood before attacking an arteriovenous aneurysm of the sub-clavian artery and innominate vein. When

such adequate precautionary preoperative crossmatching with bank blood was done, no additional emergency crossmatching was needed during the operative procedure.

The Rh determination was done on all patients receiving transfusions, and only Rh negative blood was given to Rh negative recipients. This was deemed advisable to prevent possible transfusion reactions due to anti-Rh agglutinations developing in patients receiving multiple transfusions during repeated reconstructive operations.

RATE OF ADMINISTRATION OF WHOLE BLOOD

The rate of administration of the whole blood depended upon the estimated amount and rate of blood loss by the patient and on the response of the blood pressure and pulse to that loss. Falling of blood pressure and rising pulse rate were considered an indication for an increase in the speed of administration of blood. Sometimes circulatory failure led to a complete collapse of the veins, and gravity alone was insufficient to cause a free flow of fluid. Then it might be necessary to force the blood in rapidly under pressure, either by (1) the use of a luer syringe attached to the three-way stopcock of the intravenous apparatus, or (2) by rolling the tubing toward the intravenous needle, or (3) by using a blood pressure bulb placed on the blood flask air inlet tube.

Experience in the Army hospital re-emphasized the advisability of carefully placing one and preferably two large gauge needles or cannulae into appropriate veins in the forearm or ankle before an operation is commenced. These may be kept patent by allowing a very slow drip of solution to flow through them or by leaving a stylet in place until the needle is to be used. Not infrequently, veins in the arms or the site of operation are poor and the ankle veins are the only one available. If these are small and do not distend following dependency and the proper application of hot towels, a "cut-down" and placement of cannulae should be done before beginning such surgical procedures as craniotomy, aneursysmorrhaphy, laminectomy, etc. This preoperative delay to permit the introduction of a large gauge needle pays tremendous dividends when rapid lifesaving administration of blood or plasma becomes imperative.

CONCLUSION

In conclusion it should be reiterated that supportive parenteral fluid therapy is a constant responsibility of the anesthesiologist and, further, that salt and dextrose solutions are primarily useful for the prevention of dehydration. Saline solutions and plasma are useful as temporary blood substitutes, but the most satisfactory method of maintaining the good condition of a patient during an operation in which much blood is lost requires the continuous replacement of whole blood.

Blood banks are a necessity in the modern hospital where repair of arteriovenous aneurysm, pneumonectomy, extirpation of brain tumor, or ligation of a patent ductus arteriosus is no longer considered unusual. Without a blood bank there is a tendency not to administer transfusions when indicated, or, when they are given, to use inadequate amounts of blood.

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Ancient Chinese Surgery: Acupuncture

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ACUPUNCTURE, or needle-puncture, is one of the nine branches of medical practice recognized by the present day practitioners of ancient Chinese medicine. It is a procedure peculiar to China and has been in use there from time immemorial. According to tradition, it was originated by the Yellow Emperor, Huang-Ti (B.C. 2698-2598). The technique and indications are described in The Internal Medical Classic, Nei Ching, supposed to have been written by Huang-Ti. Pien Ch'iao, a famous physician in the Fifth Century B.C., was skilled in its application. During the T'ang Dynasty (A.D. 618-907) special schools for instruction in acupuncture were established and several manuscripts on the subject were written. In A.D. 1027, by the order of the Sung emperor, two copper figures of the human body were made, with markings to illustrate the principles of acupuncture.

The purpose is to needle or puncture certain involved "vital points" (hsueh tao), to release "bad secretions" and relieve tissue obstructions. There are 365 of these vital points, corresponding to the days of the year. Each of these points has its own name and is assigned some relationship to the internal structures and to the circulatory system. Thus, this system of therapy as practised by the Chinese is dependent upon their concepts of disease and their "understanding" of the circulatory system.

It is of interest that perhaps the Chinese did appreciate the connection of the heart with circulation more than a thousand years before Harvey. In the previously mentioned Nei Ching it is written, "The heart regulates all the blood in the body . . . The blood flows in a circle and never stops." The Chinese have a theory of double circulation by which the "spirits," which are the vehicle of the Yin principle, and the blood, which conveys the Yang principle, are distributed through the body. The circulation begins in the lungs at 3 o'clock in the morning (the Hour of the Tiger) and completes the rounds in 24 hours. For the accommodation of this circulation they count twelve principal canals (Chin)—six pass from above downwards and six from below upwards. There are also accessory canals, eight of which run transversely and nine obliquely. They also speak of the three "burning spaces" which serve as a drainage system from the 12 canals into the bladder and for storage of the Yin and Yang principles. According to the ancient Chinese idea, these are two all-important opposing forces.

Everything in the universe, including health, is dependent upon the balance between these forces. They represent male and female, ebb and flow, life and death, wet and dry, sun and moon, heat and cold, strength and weakness. By acupuncture, they profess to relieve tissue obstructions, release "bad secretions" and restore the balance between Yin and Yang that constitutes well-being.

A common sight in the village market-place is the Chinese physician-surgeon with his manikin or chart of vital points. The practitioners seem to have a good combination of courage, dexterity and luck. I have seen them introduce seven or eight needles deep into the tissues without injury to the blood vessels or vital organs. I heard of only a few incidents of broken needles or of fatality following acupuncture.

The needles are of metal: steel, copper, brass, silver or gold. They vary in length from one to two feet. The ends may be arrow-headed, blunt, sharp or spear-headed. The shape is usually round but they vary in thickness. The needles are usually inserted by a blow from a light mallet. The point of insertion, depth of puncture, direction of rotation, number of needles, whether hot or cold, and length of time left in are all varied depending upon the case (and the operator).

Sometimes the needles are left in for a few days. Sometimes heat is applied to the outer end of the needles: hot acupuncture. Rarely are the needles heated before insertion. Sometimes acupuncture is used in conjunction with scarification or moxibution. This last consists in the application of combustible pine cones to the skin.

Strangely enough acupuncture does seem to be an effective remedy. In every village one heard stories of the "miraculous" cures effected by this treatment. It seems of most benefit for various types of rheumatic pains, sprains, etc. Perhaps the beneficial effects are due to counter-irritant action.

The ancient manuscripts prescribe acupuncture for a variety of ailments such as headache, convulsions and fainting spells. When these conditions have an organic basis it is not likely that "remedies" such as acupuncture will be effective.

Acupuncture was introduced into Europe from China by a Dutch surgeon named Ten-Rhyme. Following this the procedure was taken up by quacks who toured Europe and claimed to cure all sorts of diseases by acupuncture. They laid great stress on the absence of any pain except for the initial skin puncture. A later refinement was the use of galvanic currents with the needles, much like our present-day technique for treating warts and naevi. Another modification was the introduction of hollow needles and their use in instilling fluids, drugs and local anaesthetics. Apparently acupuncture has gone a long way since the days of the Yellow Emperor.

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MEDICAL PROGRESS:

DICUMAROL

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SINCE the introduction of dicumarol to clinical medicine in 1940 numerous reviews of the subject have appeared.[1,10,26,33-36] These have served to tell the story of the drug and its primary uses. Link has dramatically related the discovery and action of dicumarol[33] and any attempt to detail what is in these reviews would be superfluous. It does seem appropriate, however, to attempt to integrate some experiences of clinicians with dicumarol and to describe some of the broader phases of anticoagulant therapy as they apply to discumarol.

CHEMISTRY AND PHYSIOLOGY

Numerous chemical analogues of dicumarol have been prepared, but none have the potency of the parent substances.[34]

It is certain now that the principal, if not the sole action of dicumarol, in the dosage used clinically, is lowering of plasma prothrombin content. How this takes place is not known. The action is not on formed prothrombin but is accomplished by decreasing the formation of prothrombin. The measurement of prothrombin time has become fairly well standardized, using modifications of Quick's one stage method.[25] although there are still some questions to be answered concerning the proper thromboplastin to use. Brambel feels that he has prepared thromboplastin better suited to clinical use than that now commonly employed;[11] also the question of whether whole or 12.5 per cent plasma is the medium of choice for performance of prothrombin times remains unanswered. Many workers seem to feel that whole plasma is adequate for clinical needs.

Reports appear in which differences in prothrombin time are considered significant without any attempt to show the usual standard deviation for that particular laboratory.[30] The concentration of calcium has been shown to influence the prothrombin of diluted plasma. Certainly the technique of prothrombin determinations demands constant performance by the laboratory worker if uniform results are to be obtained.

While the details of method are a laboratory problem, the mode of reporting results is of prime importance to the practitioner. The last two years have seen vigorous attempts to clarify the confusion surrounding "prothrombin content" and "prothrombin index of activity." Aggeler has collected data from various earlier reports to show the difference in those two terms.[1] Inasmuch as they are both reported as percentage and 50 per cent "prothrombin index of activity" is equal to about 20 per cent by "prothrombin content" (Table 1), it is easy to see how misunderstandings start. Many who are interested in the subject agree that the term "prothrombin index of activity" should be dropped. Aggeler's chart reproduced here reveals the obvious difficulties. A recent article in which the confusion between the two types of expression was evident[18] has been criticized adequately.[22] Every clinician who is going to use dicumarol should know and understand completely the method of reporting used by his laboratory before starting treatment.

Barker et al. felt that all prothrombin times should be reported as percent for normal prothrombin content.[25] They gave their own meticulous detail for the calibration of each batch of thromboplastin with whole and dilute plasma. They felt that a laboratory is not justified in using sets of parallel curves for differing thromboplastins. It is doubtful whether the clinical use of dicumarol demands such exacting methods for reporting prothrombin determinations.

Many laboratories report prothrombin times as such—merely giving the time for the test plasma and the time for normal plasma. This method avoids the

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Table 1.—*Comparison of the Prothrombin Time, Prothrombin Concentration and Prothrombin Index Obtained with Different Specimens of Thromboplastin (from Aggeler, Calif. & West. Med., 64:71-77, Feb., 1946)*

Prothrombin Time in Seconds, Specimen					Prothrombin Concentration	Prothrombin Index of Activity, Specimen				
1*	2†	3‡	4‡	5§		1*	2†	3‡	4‡	5§
10	11½	12	19	27	100%	100	100	100	100	100
17½	24	18	27		30%	57	49	67	70	
21	35	21	35		20%	48	33	57	54	
37	75	35	60	69	10%	27	15	34	32	45
97	197	69	118	90	5%	10	6	17	16	30

* Pohle, F. J., Stewart, J. K., Am. J. M. Sci., 198:622, 1939.
† Aggeler, P. M., Lucia, S. P., Unpublished data.
‡ Hurn, M., Barker, N. W., Magath, T. B., Proc. Staff Meet., Mayo Clinic, 19:507, 1944.
§ Davidson, C. S., MacDonald, Am. J. M. Sc., 205:24, 1943.

confusion of percentages and has been utilized by several workers.[41,44,51,55] The evaluation of prothrombin times and concentrations will be given later when the method of dicumarol administration is discussed.

Depression of plasma prothrombin is the most important action of dicumarol; however the drug does influence other blood constituents. Irish and Jacques, working with dogs, demonstrated a depression of plasma fibrinogen when doses of 15-20 mg. per kilo body weight were used.[27] In doses of 3-5 mg. per kilo there was either no effect on fibrinogen level or a slight elevation. These workers felt that this action simulated that of liver toxins. It should be noted that there have been no reports of liver damage from dicumarol as it has been used clinically.

Dicumarol may change platelet stickiness, Wright.[54] and Spooner and Meyer.[52] using an ingenious technique of Wright's, felt that they could show decreased stickiness of platelets in animals treated with dicumarol. This decrease was not correlated with change in platelet count. If true, "*in vivo.*" it might explain the ability of dicumarol to lessen thrombus formation in doses that do not affect the venous coagulation time "*in vitro.*"

Certain drugs have been found to exert an action that antagonizes dicumarol. The chief of these is vitamin K, particularly the synthetic product menadione bisulfite. This action, at one time denied, is now confirmed and has been thoroughly discussed by Davidson, Freed, and MacDonald.[15] These workers have shown that vitamin K is very effective in shortening a prolonged prothrombin time, but they also believe that the drug may be ineffective when venous coagulation time is prolonged. These results may explain two recent reports of failure of vitamin K to control massive hematuria.[8,49]

Link has written that the methylxanthines exert a clinically significant effect on prothrombin content, tending to raise its level and to antagonize dicumarol.[19,20] Two sets of workers have published their results on the effect of aminophyllin on plasma prothrombin content. Scherf and Schlachmann were satisfied that large doses of aminophyllin shortened plasma prothrombin time.[50] Breytspaak and Greenspan could not confirm this.[12]

Scorbutic animals are more sensitive than normal ones to the action of dicumarol.[35] Thyroid principle does not influence the action of dicumarol.[53] Quinine and perhaps quinidine have a tendency to lower plasma prothrombin content an effect that is overcome by vitamin K.[45] The action of salicylate is parallel to that of dicumarol and there seems no doubt that experimental hemorrhage can be caused by heavy doses of salicylates.[21] The mechanism of this action is not clear but may have something to do with the fact that salicylates have been used as the starting points for the experimental synthesis of dicumarol. Goth submitted a brief note alleging anti-bacterial properties to dicumarol.[23]

The number of reports attesting to the value of dicumarol in thrombo-embolic disease has been large, although the great number of methods now available to treat thrombosis has made it almost impossible to evaluate any one method as compared with the older type of conservative treatment.[2-6,16,29,43,47,56,57] In the last five years, early diagnosis, early rising and postoperative exercises have all played a part in the gratifying reduction in mortality and morbidity from thrombotic disease.

Dicumarol has undoubtedly saved lives, yet experiments upon which the clinical use of dicumarol is based have not reproduced the clinical method of administration of the drug.[17,39,42,48] Thus those workers successful in the treatment of experimental thrombosis used doses of dicumarol that not only lowered plasma prothrombin content but also prolonged venous coagulation time. As Aggeler points out, it has not yet been shown experimentally that dicumarol is effective in preventing thrombosis unless given in large enough doses to alter coagulation time of blood.

Postoperative thrombosis occurs in about 1 per cent of unselected cases.[5] Figures attributing a higher incidence to certain types of operations are hard to evaluate because they generally fail to take age, sex, type of disease process and patient's general condition into consideration.[37] Of cases of deep venous thrombosis, about 20 per cent die of pulmonary embolism if treated without anticoagulants or surgery.[5,29]

Barker has summarized the experience at the Mayo Clinic in the years 1940-1945 with deep and superficial thrombophlebitis and pulmonary emboli.[42] The figures are shown in Table 2.

TABLE 2

Disease and Treatment	Number of Cases	Number of Recurrences	Number of Fatalities
Pulmonary embolus—no dicumarol	687	297	124
Pulmonary embolus—dicumarol given after embolus	180	4	1
Postoperative thrombophlebitis—no dicumarol	897	95	51
Postoperative thrombophlebitis with dicumarol	138	4	0

It is not clear from the report what type of treatment the patients received other than dicumarol.

Reich, Yahr and Egger reported on the use of dicumarol in the treatment of 33 cases of venous thrombosis and nine cases of pulmonary emboli that occurred in 259 general surgical operations.[56] They had no fatalities.

Jorpes' article reported much of his own work as well as that of several other workers using anticoagulant therapy.[29] He quotes G. Bauer as follows:

Disease	Number of Cases	Mortality
Deep venous thrombosis—no anticoagulants	25,628	18%
Deep venous thrombosis with anticoagulant (heparin)	16,495	1.4%

A good and complete review of the use of anticoagulants in thrombo-embolic disease has been written by Zilliacus.[57] His figures compared favorably with those quoted above. In addition he showed a definite reduction in morbidity and thrombotic sequelae when dicumarol was used. Thus, under "conservative" treatment (no anticoagulant and no surgery) thrombosis of calf, or calf and thigh veins required an average period of hospitalization of 35 days with an average of 21 days' fever. Cases treated with dicumarol had an average period of hospitalization of 11 days with an average of eight days' fever.

Zilliacus also commented on the spread of thrombotic processes under conservative and under anticoagulant types of treatment. Thus with conservative treatment, 31 per cent had spread of calf or calf and thigh thrombosis to the other leg. When dicumarol was used, only 2.2 per cent had such a spread.

Zilliacus reported that of 166 patients who survived an initial pulmonary embolus, 63 were treated conservatively and 17 died. 103 were treated with dicumarol and none died. These figures are in close agreement with those of Barker previously quoted.

Jorpes felt that while ligation, exercise, and sympathetic block may produce results comparable to those obtained with anticoagulants, none of these procedures is the final answer and anticoagulants should always be used.[29]

Yahr, Reich and Egger felt that dicumarol is the treatment of choice for thrombophlebitis.[56]

Allen published a preliminary report comparing vein ligation with dicumarol. The doses of dicumarol used were very low by the usual standards.[2] The results as published show no advantage in the use of dicumarol prophylactically inasmuch as of 101 patients who received the drug, three developed postoperative thrombo-embolic complications. In a control group of 562 patients who were of similar age distribution (40 to 64 years), 14 developed thrombo-embolic complications.

The prevention of venous thrombosis by prophylactic dicumarol therapy remains an important phase of therapy not commented upon here for lack of sufficient reports. Reich et al. reported a case of septic cavernous sinus thrombophlebitis cured with sulfonamides, heparin, dicumarol and sedation.

ARTERIAL OCCLUSION

Dicumarol has been used for the treatment of acute arterial occlusions. A recent report advised that heparin and dicumarol be started as soon as a diagnosis of arterial obstruction was made.[7] This was done in the hope of preventing thrombosis in the slowed arterial and venous circulation distal to the obstruction. In a series of 15 patients with acute arterial occlusion who were treated with heparin and dicumarol, three developed gangrene and one died. Of a group of 100 cases of acute arterial occlusion reported in 1935, 50 developed gangrene and 36 died.[38]

The anticoagulant drugs have made embolectomy an operation with a future. If these drugs are started as soon as an arterial occlusion occurs, it is possible that the period of observation prior to embolectomy could be prolonged above the usual six-hour limit.

A report from France recorded the use of dicumarol in the treatment of four young adults with occlusion of the central retinal artery.[14] The author felt that improvement was more complete and rapid than might have been expected with usual therapy.

CORONARY THROMBOSIS

During 1946 three reports appeared with respect to the use of dicumarol in the treatment of coronary thrombosis.[41,44,55] Blumer[9] and more recently Nay and Barnes[40] have emphasized the high incidence of thrombotic and embolic complication of myocardial infarction (from 14 per cent to 37 per cent). It was in the hope of lessening these accidents that dicumarol was used.

Nichol and Page gave dicumarol to 44 patients with myocardial infarction.[41] There was only one instance of pulmonary embolus, and in that case the dose of dicumarol was thought to have been far too low. None of 26 patients treated during the first episode of infarction died. Eight of the entire group of 44 patients died. The average dose of dicumarol was 2100 mg. in a period of 25 days.

Peters et al. treated 110 patients, 50 with dicumarol and 60 received no dicumarol.[44] Of the 60 treated without dicumarol, 13 died, five with pulmonary emboli; of the 50 treated with dicumarol, two died, none with emboli.

Wright gave dicumarol to 76 patients with myocardial infarction; these patients were divided into two groups, complicated (of whom there were 43) and uncomplicated (of whom there were 33).[55] In the complicated group were included those with repeated episodes of multiple thrombi or repeated embolic phenomena. In this group there were 11 deaths (25 per cent) as against an expected 50-60 per cent mortality. In the uncomplicated group there were four deaths (12 per cent) as opposed to an expected 20-30 per cent mortality.

All of the workers felt that adequate controls were lacking in the various series. More reports from other series will be needed before the place of anticoagulant therapy in myocardial infarction can be accurately determined.

Cotlove and Vorzimer wrote that determination of prothrombin time was not an accurate index of clotting tendency in heart disease.[13] In the cardiac patients with thrombo-embolic complications they studied, there was no significant change from normal in plasma prothrombin time.

This should be contrasted with the work of Peters, Guythe, and Brambel[44] who felt that patients with cardiac infarction had an increased clotting tendency which could be detected by serial prothrombin time determinations.

Reese reported 28 failures in the use of dicumarol in 28 patients with multiple sclerosis.[46]

ADMINISTRATION OF DICUMAROL

Although dicumarol is absorbed rapidly from the intestine, its effect is not noticed before 18 hours and

rarely may be delayed 48 to 72 hours. This lag period should be remembered when an emergency anticoagulant is needed as in arterial occlusion or pulmonary embolism.

Attempts to form a dosage schedule for dicumarol based on patient weight have been unsuccessful. The individual response is not uniform and the only safe way to be guided in dosage is by changes of prothrombin time. All other criteria for proper dosage such as hematuria or capillary coagulation time seem dangerous or unreliable.

The average initial 24-hour dose of dicumarol is 300 mg. given at one time, followed by 200 mg. in the next 24 hours, if the patient is not small. Daily prothrombin times are performed, and maintenance dosage depends on those determinations. If the reports from the laboratory are returned in terms of prothrombin content as per cent of normal then the aim is to keep prothrombin content around 20 per cent of normal. If the content is above 20 per cent of normal, give 100 mg. of dicumarol. On those days when the content is below 20 per cent of normal, omit dicumarol.

Many feel that a satisfactory aim of treatment is to double the whole plasma normal prothrombin time or to treble the normal prothrombin time of 12.5 per cent plasma. Wright tried to keep the prothrombin time of his cardiac patients between 30-35 seconds.[55] He gave 300 mg. of dicumarol initially and daily until the prothrombin time reached 35 seconds. At this point dicumarol was stopped. It was readministered in doses of 100 mg. when the prothrombin time fell below 30 seconds.

Nichol and Page tried to keep the prothrombin time between 27 and 35 seconds by similar adjustment of dosage.[41]

All schemes of dosage rely upon frequent determinations of prothrombin time.

INDICATIONS

Barker has listed the indications for dicumarol administration;[4] to the usual thrombo-embolic diseases will probably be added myocardial infarction and acute arterial occlusion. Jorpes emphasized that pulmonary embolus and arterial occlusion are emergency states and should receive initial administration of heparin with dicumarol.[29] The value of anticoagulants in cardiac arrhythmias is a problem whose answer is awaited eagerly.

CONTRAINDICATIONS

The contraindications to dicumarol have not been changed appreciably from Barker's list:[4]

1. Presence of definite renal insufficiency.
2. Presence of definite hepatic insufficiency.
3. Hepatogenous jaundice particularly if associated with prothrombin deficiency.
4. Subacute bacterial endocarditis.
5. Purpura or any other blood dyscrasia with a tendency to bleed.
6. Recent brain or spinal cord surgery, injury or hemorrhage.

Conditions in which the drug must be used cautiously are:

1. Ulceration, or easily bleeding lesions.
2. Vomiting due to gastric or intestinal obstruction.
3. Continuous or repeated gastric or intestinal drainage.
4. Dietary or nutritional deficiency.

TOXICITY

The toxic reaction to dicumarol is hemorrhage. Aggeler, in his review quoted a general incidence of this complication of 8 per cent, with five deaths due to hemorrhage in 1,471 patients treated with dicumarol.[1] Barker wrote that the seriousness of dicumarol bleeding had been overemphasized.[5]

There were two reports of massive hematuria due to dicumarol that failed to respond to vitamin K.[8, 49] One case and a lengthening of prothrombin time from 190 seconds to 240 seconds after 120 mg. of menadione bisulphite was given intravenously. In such cases fresh transfusion of citrated blood are needed. Both cases took larger doses of dicumarol than thought proper now; one man took an average of 300 mg. daily for seven days; the other man took 100 mg. daily at home, for 17 days. If such dangerous sequelae are to be prevented, dicumarol administration must be governed by frequent determinations of prothrombin time.

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California Cancer Commission Studies*
Chapters II and III

Principles in the Treatment of Cancer

Emile Holman, M.D., *San Francisco*

THE physician who first examines a patient with presumed or suspected cancer must be aware of the potentially fatal damage his examination may inflict, since he may by this very examination nullify completely all subsequent efforts to cure. I refer to the need for extreme gentleness in handling any malignant tumor lest by squeezing or compressing it, tumor cells are forced into lymphatic or blood channels and thence into regional lymphnodes or lung.

For the same reason multiple examinations should be avoided. Mieroscopic studies of malignant tumors frequently reveal invasion of blood vessels and lymphatic channels by malignant cells which then lie on the brink of a swiftly moving stream capable of carrying them into inaccessible areas. It is probably true that many cancerous patients are already doomed before they are examined by a doctor because of the mistaken belief that massage and hot applications are good treatment for a lump. Occasionally it happens that the doctor may not think of cancer as applying to a particular case and may unwittingly prescribe such dangerous treatment.

Of equal importance at the first examination is recognition of the urgeney of *immediate* treatment of a possibly malignant tumor—not in two or four or six weeks, but *now!* Invasion of a circulatory channel by malignant cells and migration to remote areas may occur at any time, and as a result the surgieal care of eaneer should be instituted as soon after discovery as possible. It may be justly said that operation for cancer is almost as much an emergency as operation for a ruptured ulcer or gangrenous appendix.

A third all important principle in cancer therapy is never to postpone the institution of surgical care simply because no signs of malignancy have appeared. For example, a single newly developed lump in a woman's breast, no matter how innoeent it appears, or how symptomless it may be, must be considered as subject to immediate removal for macroscopie and mieroscopic study. Under no circumstanees should such a lesion be *watched* for the signs of malignancy to appear, such as dimpling of the skin, retraction of the nipple, distortion or fixation of the breast, or palpable lymphnodes. When these signs are present it is usually too late for eure. The ideal time to eure a cancer is when it is impossible to recognize it elinically as cancer, when the only symptom is nothing more than a lump, as in the breast, or a single bleeding ulcer, as in the large bowel, or a scab on the lip that does not heal, or a gastric ulcer refractory to treatment, or a persistent hacking cough as in cancer of the lung, or persistent hoarseness as in cancer of the larynx, or mild difficulty in swallowing as in esophageal eancer, or the sudden appearance of itehing or seabbing of a black mole.

A fourth important principle in cancer therapy is not to neglect *seemingly* unimportant symptoms without *proving* them unimportant. When a patient complains of bleeding from the bowel it must not be ascribed to hemorrhoids *without* a digital and proctoseopic examination, and if these are negative, without a barium enema examination. These should follow each other in that order in every instance of bleeding from the bowel. Similarly, a change in cough habit, and particularly a persistently blood tinged sputum, demands without fail an immediate roentgenographic examination of the lungs. Bleeding from the vagina must not be ascribed to simple myomata without proving it by careful vaginal examination and miscroscopic section of uterine scrapings whenever indicated.

All too frequently patients present themselves with inoperable cancer and a history that gives damning evidenee of a doctor's neglect of early symptoms and of his failure to do simple examinations when these symptoms first sent the patient to the doctor for advice. They received improper advice because important examinations were neglected.

A fifth all important principle in cancer therapy is not to undertake an operation for a presumed simple or innocent looking lump or lesion without having aecess to frozen section diagnosis—not tomorrow and not in another city a few hundreds miles away, but immediately and locally! Delay in performing the more radical operation for complete removal of the local lesion may result in ultimate failure and an avoidable death from cancer. This is because the excision of a mass on an assumption that the tumor is benign frequently leads to incomplete local removal and to transection of lymphatics

*Organized by the Editorial Committee of the California Cancer Commission.

filled with cancer. For the same reasons no doctor should remove any lump unless he is qualified to perform a radical operation at once if indicated.

As to the principles underlying the surgical excision of the lesion itself, there is only one: *complete* removal—wide excision of the local tumor and dissection of draining lymphnodes "en bloc" whenever possible. More specific surgical measures will be presented in the chapters dealing with specific lesions.

GENERAL PRINCIPLES

1. Be gentle in examination of a tumor—it may be cancer.
2. Cancer is an emergency.
3. Don't *watch* lumps or ulcers.
4. Be thorough—run down every sign and symptom.
5. The first sign of cancer may be a common symptom.
6. Don't tackle more than you can handle.

Examination of the Patient for Cancer

Chapter III

Otto H. Pflueger, M.D., *San Francisco*

"*EARLY Cancer is Curable.*" This implies early diagnosis and adequate treatment.

We are here concerned with early diagnosis. It is a fact that a careful history and physical examination will go far in reducing cancer mortality. For this reason we devote this section to what may appear so simple a thing as discussion of the examination of a patient. It is a fact that we have been culpable in neglecting the performance of this basic procedure. Our shortcomings are frequently due to carelessness or laziness. Hemorrhoids are removed for rectal bleeding without finger examination—breasts are not carefully palpated—vaginal examinations not made. *The basis of all diagnosis is the history and physical examination.* This cannot be overemphasized. These guide us in determining the need for further investigation.

There is much education of the public concerning cancer. As physicians we must keep cancer in mind as a possible diagnosis. We must do the simple procedures. Remember a "psychoneurotic" individual can get cancer just as well as a phlegmatic, well-balanced one. The individual who visits a physician for an examination because of the fear of cancer is an intelligent person. Such a person is entitled to a complete and thorough examination. All too frequently, when the doctor ascertains there are no symptoms, he says no examination is necessary. This is a deplorable attitude and defeats the purpose of all cancer education.

Patients may come to the doctor for examination with or without symptoms. The latter probably require even more careful investigation. Cancer is an insidious disease—there is *no symptom complex* for early cancer. It is noted for its paucity of symptoms. Nature, unfortunately, is uncooperative. An unseen and nonpalpable tumor makes its presence known when it interferes with the function of the organ involved, or when it is extensive enough to become necrotic and bleed, or encroach upon neighboring nerves and produce pain.

What, then, is our course of procedure? Remember, we are interested in curing cancer, in being able to eradicate it completely while it is still a local disease or at the worst confined to its neighboring nodes.

HISTORY

Elicit a Careful History. This should include family history, past history, and present illness (symptomatology), if there be any. If an orderly procedure is followed, one is less liable to overlook pertinent points.

Family History:

In a general way we may say cancer is not hereditary as far as we know, yet the susceptibility is greater in offspring where cancer has been present in the antecedents. Certain diseases are definitely familial and precancerous, such as congenital polyposis of the colon. Get a family history—it may give a valuable lead. Those who have a familial incidence should be reassured by being told they are fortunate in being aware of their susceptibility and that they can avoid future trouble by frequent examinations.

Past History:

Occupation may be an important guide. There are a number of carcinogenic agents used in industrial activities, *e.g.* coal tar and coal tar derivative and aniline dye products. Frequent x-ray exposures may produce skin changes, as does also excessive exposure to actinic rays and other irritating factors, *e.g.* cancer of the lower lip in farmers and seamen.

It is important to know about those conditions which may produce a stomatitis and glossitis of a chronic nature. We refer to chronic irritation from ill fitting dentures, excessive tobacco, syphilis, and untreated avitaminosis. Chronic oral mucous membrane changes are common where these factors are encountered.

Present Illness (Symptomatology):

As stated above, the onset of cancer is insidious. While the symptomatology may be vague and indefinite, attention to minute complaints is important. *Any change in the function of a system merits attention*—the onset of a chronic cough, voice change, a change in bowel habit (as unsual constipation, tenesmus or diarrhea), loss of appetite, any change in one's feeling of well-being. Any discharge, especially a bloody one, from a body orifice may be most important and merits immediate attention.

Take an orderly system history. Inquiry concerning symptoms may elicit information which the patient considers too insignificant to mention.

An individual may complain of a sore or a lump. One must know all about that. How long has it been present? Has it grown—if so, slowly or rapidly? If a mole, has the color changed? If a sore, how did it start? What was the apparent inciting factor? Was there a lump present before the sore started? There are so many things one can know about a sore or lump which are important. Find them out!

Pain is not an early symptom, except in one condition. The presence of pain in young individuals is probably the earliest symptom of a bone sarcoma. Attention to this fact with careful investigation from the radiologic standpoint will go far in discovering a bone tumor in an earlier stage. Too often such a complaint is passed off without x-ray examination, as a "growing pain" or neuralgia, and a correct diagnosis is not made until a tumor is palpable. A roentgenogram will show bone changes before a palpable lump is present.

In general, however, *pain is a late symptom in cancer.* We must make the diagnosis before pain occurs, on the basis of other minute or vague complaints. Consider the diagnosis of cancer before pain is present.

Fatigue, loss of weight, or related physical findings as anemia, pallor, poor tissue turgor, jaundice, etc., are symptoms more or less common to cancer in various locations. They are manifested usually late in the course of the disease and hence are of little value in making an early diagnosis. Don't wait for any of these signs or symptoms before considering a diagnosis of cancer.

PHYSICAL EXAMINATION

How to make a physical examination? The answer is simple—*make a thorough complete physical examination, inspecting all the body orifices.* We shall consider points to think about in doing so.

Skin and Subcutaneous Tissue:

Observe and palpate for lumps or moles. Is it a single one or are there more than one? Are there areas of pigmentation? If a mole is present, is it in an area where it can be irritated by trauma or constant rubbing? Especially in people who are out of doors a great deal, examine the face and hands for scaling and keratosis.

Oral Cavity:

Examine it thoroughly with a good light and mirror. Look not only for an ulcer, but for those conditions which signify chronic changes and may be precancerous. Observe for leukoplakia, chronic glossitis, stomatitis, or evidence of an ill-fitting denture. Attention to these goes far in the avoidance of future cancer. Palpate as well as inspect.

Lymph Nodes:

Unfortunately, lymph nodes enlarged because of cancer mean that there already has been a spread of cancer from the point of origin and the disease is no longer entirely local. Such cases are by no means hopeless, for the primary and secondary disease in many instances may yet be eradicated and a fair percentage of five-year cures obtained.

Cancer spreads generally along fairly well defined lymphatic routes so that the presence of nodes in any given area will indicate the probable location of the primary tumor.

Neck:

Lip cancer first spreads to the suprahyoid area as a rule, as does cancer of the buccal mucosa, anterior two-thirds of the tongue, floor of the mouth and gums. Tonsil, nasopharynx and lower pharynx tumors usually metastasize to the deep cervical nodes. A necessary point to remember is that in a fair percentage of cases the first sign or symptom of a cancer in one of these areas, especially in the last three locations, is a lump in the neck, *i.e.* a metastasis. *The commonest cause of asymmetrical lymphadenopathy in the neck of an older individual is metastatic cancer.* A person presenting this sign must have a thorough examination of the mouth, nasal passages and entire pharynx. The primary tumor may be so small that repeated examinations may have to be done before it is found. Only after initial thorough examination should a biopsy of neck nodes be done.

Supraclavicular involvement may be from the breasts or thorax. The signal node on the left may be involved as a result of tumor in the abdomen or even testicle.

Axillary nodes signify a tumor of the breast, upper extremity, upper back or anterior chest wall. Examine for axillary nodes with the patient's hand resting on the examiner's shoulder.

Inguinal nodes are involved by spread from the external genitalia, lower trunk, extremity or from the anal region. This last area is sometimes forgotten—remember to examine the anal area when enlarged inguinal nodes are present.

Breasts:

Examine the breasts of all women. Look for changes in configuration, appearance of nipples and skin, but most of all for a lump. The time to diagnose cancer of the breast is when there is only a lump present; in other words, when the diagnosis is clinically doubtful. Note whether there is only a single lump or more than one lump present. Ob-

serve its consistency, movability and delineation of the border for roundness or nodularity, for these suggest the nature of the tumor. We pass these over lightly for they will be discussed in the supplement on breast tumors. Examine the breasts with the patient sitting; also lying with the arms at the sides and above the head. Have the patient also sit forward so the breast, if pendulous, may be palpated between the two hands. Above all, palpate carefully and gently.

ALWAYS DO A PELVIC EXAMINATION

Pelvic Examination:

Bimanual palpation and inspection in good light are most important. Look for discharge, its nature if present, erosion, ulceration, and easy bleeding on touching the cervix.

Rectum:

A high percentage of rectal cancers can be palpated with the examining finger. This simple procedure is too often overlooked. Completely unsuspected rectal cancer has been found by finger examination when there were no symptoms to suggest the need for such an examination. A proctoscopic examination is also indicated because many cancers which cannot be reached by the finger can be seen. The prostate should also be palpated.

Blood and *Urine* examinations should be routine. Roentgen examination of the chest and gastrointestinal tract are advisable, especially in individuals over forty.

The foundation of the diagnosis is the history and physical examination. We can give assurance of the probable absence of a lesion only if we have performed the necessary examinations.

These are all minor matters, easily forgiven. The chapter on gastric analysis, however, is a dismal, obsolete one far below the otherwise high standards of this edition.

* * *

PENICILLIN THERAPY, Including Streptomycin Tyrothricin and other Antibiotic Therapy. By John A. Kolmer, M.D. Second Edition. D. Appleton-Century Company, New York. Price $6.00.

The fact that Doctor Kolmer's book on penicillin and other antibiotics now goes into a second edition shows how rapidly progress is being made in this domain. Doctor Kolmer covers the subject systematically. There are general chapters on the principles of chemotherapy, and the history of penicillin and methods of production are described. Methods of assay, chemical and physical properties are then dealt with, and finally the details of clinical application are discussed. Streptomycin and other antibiotics are dealt with more briefly in the concluding chapters. The book is useful because of attention to detail and the thorough bibliographies. In a quickly moving subject it is impossible to keep entirely up-to-date in any book, but essential matters are unchanged for the most part and this treatise is certainly a storehouse of valuable information on the whole subject.

* * *

PARENTERAL ALIMENTATION IN SURGERY, With Special Reference to Proteins and Amino Acids. By Robert Elman, M.D., Associate Professor of Clinical Surgery, Washington University School of Medicine, St. Louis, Missouri. Paul H. Hoeber, Inc. Price $4.50.

This monograph comes at a timely moment, as the subject of parenteral feeding and support of the patient has made great strides in the past few years. Doctor Elman first covers the interesting historical phase of this subject, then he considers the six major nutritional substances separately. The general indications and methods of administration are adequately covered.

Following this are chapters devoted to more detailed study of water, electrolyte, energy, vitamin and protein needs. The largest part of the book is devoted to the latter, and the subject is rather exhaustively covered. Special emphasis is placed on the use of protein hydrolysates as a source of available nitrogen. One chapter is devoted to a practical program for parenteral administration.

In discussing the use of fluids to hydrate a patient, the author confuses the reader as to the merits of 5 per cent dextrose and normal saline. On page 90 he states that five liters of 5 per cent dextrose actually dehydrates while the same volume of saline hydrates the patient. On page 65 he states that dehydration from water deprivation alone should be corrected by dextrose and amino acids with only 1 or 2 grams of salt per liter. Clarification of such views would be helpful.

The author discusses and recommends the use of plasma as one source of protein, but he fails to caution the practitioner about the great danger of homologous serum hepatitis. This threat is so great that many physicians use plasma sparingly.

A chapter on the use of alcohol intravenously as an additional source of calories as well as a sedative could be added at a revision of the text.

This monograph is well printed on paper that is better than the usual postwar product, but which is nevertheless of only fair quality. Figures and tables are adequate. The bibliographies at the end of each chapter are outstanding.

Finally, the name of the book should be changed to a more general title. While parenteral fluids and nutritives are important in surgery, they are equally so in medicine, pediatrics, psychiatry, etc., and this volume should be of as great value to the internist as to the surgeon.

istic style by an enthusiast who vents his ideas and opinions with the gusto of a father describing his first born male child. If it is not a rigidly scientific manuscript, it is interesting as the revelation of an active, restless mind which jumps from point to point in the narrative even as the author has scrambled from rock to rock in his quest among the macrocytic anemias.

The first half of the monograph deals with the study of macrocytic anemia in general. The latter half is concerned with folic acid. The impression conveyed is summarized by the statement (on page 46) that of 218 persons who received folic acid "every person with Addisonian pernicious anemia, sprue, nutritional macrocytic anemia, macroeytic anemia of pregnancy and nutritional leukopenia has responded satisfactorily." One has to read another 30 pages before he finds out that combined system disease not only fails to regress but may actually develop while the patient is receiving folic acid. It therefore is not a substitute for liver extract but at present actually is harmful unless given under controlled experimental conditions. One may mention, too, that other investigators have not had the author's uniformly happy hematological response in nontropical sprue.

* * *

PRINCIPLES AND PRACTICE OF OBSTETRICS. By Joseph B. DeLee, M.D., and J. P. Greenhill, M.D. Ninth Edition, with 1108 illustrations on 860 figures, 211 in color. W. B. Saunders Company, Philadelphia. 1947. Price $10.00.

This grand old text has been revised extensively by Dr. J. P. Greenhill, who for many years was a close associate of the late Doctor DeLee. Doctor Greenhill edited the previous edition with pious respect for the departed author without making major changes. In the present edition he has dropped much that had become traditional and outmoded and added considerable material in line with progress in the fundamental and clinical sciences. A number of the old chapters have been rewritten in their entirety: several new chapters have been added. The present edition has been enhanced by many new illustrations cleverly designed to help the beginner in visualizing difficult problems.

Analgesia and anesthesia has been brought up-to-date in text and graphic depiction of technical matters. Methods are compared critically in regard to safety and hazards. This chapter condenses much useful and basic information into relatively few pages, making it easy for the busy practitioner and overworked student to aequire basic knowledge with a minimal amount of reading. Fetal erythroblastosis and the Rh factor actually can be read with profit and enjoyment, having been boiled down to essentials without obscuring the subject matter with highly technical descriptions. The chapters dealing with various aspects of physiology are well illustrated and the respective discussions deal with a difficult subject in a manner that should please teacher and student alike and even might entice the busy practitioner to revise old notions. The various chapters dealing with the architecture of the pelvis and its bearing on the mechanisms of labor are a bit disjointed, as they are in most obstetrical texts, but they contain much useful information, though the reviewer would have welcomed a more extensive discussion of the comparative value of radiographic and manual pelvimetry. However, salient factors in pelvic architecture and their bearing on labor are reviewed in the light of traditional as well as anthropomorphic values so that the observant student can equip himself adequately for a better understanding of the normal and abnormal mechanism of labor.

Doctor Greenhill has enhanced the value of chapters describing the various disease processes encountered in pregnancy by adding newer conceptions of their etiology and their treatment. Chapters covering normal pregnancy and labor essentially were left unchanged. Operative obstetrics are illustrated in detail, including the newer techniques of extraperitoneal cesarean section. Much of the treatment described in the various chapters is based on experience at the Chicago Lying-In Hospital. A more extensive discussion of proven methods used elsewhere would have enhanced the value of therapeutic matters. However, this purely is the personal reaction of the reviewer and in no way is meant to belittle the splendid job done by Doctor Greenhill in perpetuating one of the great textbooks of obstetrics.

* * *

PRACTICAL PHYSIOLOGICAL CHEMISTRY, Twelfth Edition. By Philip B. Hawk, Ph.D., President, Food Research Laboratories, Inc., Long Island City, New York; Bernard L. Oser, Ph.D., Director, Food Research Laboratories, Inc., Long Island City, New York, and William H. Summerson, Ph.D., Associate Professor of Biochemistry, Cornell University Medical College, New York City. Copyright 1947. The Blakiston Company, Publishers, Philadelphia. Price $10.00.

The present edition, appearing 40 years after the first and ten years after the most recent edition, exemplifies the growth and present state of physiological chemistry. Its well-printed and well-bound 1,323 pages contain directions for carrying out almost every qualitative or quantitative chemical analysis likely to find a place in medicine.

Many modern devices and their applications are discussed: the polarograph, electrophoresis apparatus, photoelectric colorimeter, flame photometer, photoelectric quartz spectro-photometer, photofluorometer, and mass spectrometer, each recieve attention. There is a section on isotopes, and a chapter on antibioties and metabolic antagonists; the 17-ketosteroids are included.

There appear to be few shortcomings. Urinary casts are described, but the chemical properties causing the disappearance of hyaline casts from dilute or alkaline urine receive no attention. Methods are not given for the determination of substances used in the measurement of glomerular filtration rate or renal plasma flow. Watson's simple test for the detection of porphobilinogen in the urine is omitted. In many places, interpretations of the results of chemical analyses leave much to be desired.

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EDITORIALS

Sulfonamide Therapy of Intestinal Disorders

With the discovery of the bacteriostatic action of sulfonamide preparations on a host of gram negative bacilli, a bright new vista opened up in the management of intestinal tract infections. There seemed to be great promise, not alone of successfully treating specific infectious diseases, but also of carrying out successful prophylactic therapy to prevent secondary complicating bacterial invasion, particularly in surgical conditions. At present the hope that certain intestinal infections may be completely eliminated by chemotherapy has in fact been justified, so that it is important to take stock of the effectiveness and the limitations of the sulfonamide drugs which are now most widely used.

The drugs to be considered may be logically divided into two distinct groups. The first group is composed of those preparations which are poorly absorbed from the gastro-intestinal tract and consequently exert their chemotherapeutic effect purely by local action within the intestinal lumen. The second group is composed of a more widely used series of preparations which are readily absorbed from the intestinal canal and exert their therapeutic action not only within the intestinal lumen, but also diffusely through all tissue structures, including the intestinal mucosa and submucosa. In the first group three preparations in particular have been given extensive clinical trial. These are sulfaguanidine, sulfasuccidine (sulfanil sulfathiazole) and sulfathalidine. The first two were used throughout the world in the practice of military medicine to combat a wide variety of intestinal infections during the recent war. Because of this extensive experience reported upon by a large number of observers, a summary of their effectiveness now seems conclusive. The therapeutic results with the third and more recently developed preparation, sulfathalidine, do not warrant a decision at present that it is superior to the other two. Of the many preparations in the second group of readily absorbable sulfa compounds, only two need to be considered in reference to intestinal infections—sulfathiazole and sulfadiazine. The first of these two is included only because it was developed at the onset of the recent war and physicians gained a broad experience with it before the second, sulfadiazine, came into general use. Of the two, sulfadiazine receives preference largely because it is less toxic than sulfathiazole.

In choosing which type of sulfa drug to use in treating an intestinal infection or in attempting to combat a possible spread of infection from the intestinal canal, the decision not only depends upon the effectiveness of a given preparation, but also on the degree of toxicity which it may cause. Originally the less absorbable type of preparations included in group one were developed because their toxicity was negligible, despite their administration in large doses, in comparison to the earlier sulfa compounds, some of which produced a high incidence of toxic effect. Their poor absorption resulting in low toxicity, together with their therapeutic effectiveness in dysentery bacillus infections, has placed them in a position of high therapeutic importance in combating intestinal tract disease. However, with the development of sulfadiazine which has a low degree of toxicity despite its ready absorption from the intestinal lumen, it appears that this preparation is the therapeutic agent of choice among the sulfa compounds in the management of digestive tract infections. It also has the advantage of being effective in relatively small dosage and consequently it is less expensive than the less soluble compounds.

The management of bacterial infections of the intestinal tract by sulfonamide therapy may be divided into three major categories. The first and most clear-

cut problem is the treatment of specific bacillary infections, such as those caused by the shigella and salmonella groups of organisms. The second problem of management is infection in the gastro-intestinal tract of unknown etiology, such as occurs in certain cases of chronic diarrhea and ulcerative colitis. In these conditions the results of sulfonamide therapy can only be judged by its influence on the clinical course of the disease. The third problem is one of prophylactic therapy directed against the spread of the colon bacillus outside of the intestinal lumen which may occur in cases of intestinal perforation or following surgical procedures on the small intestine and colon. The results of this type of therapy can only be judged after statistical analysis of a large number of similar cases.

The therapeutic results in those forms of dysentery where the infection has been due to the shigella group of bacilli have been almost uniformly good. Not only can the etiological agent be eradicated in both acute and chronic infections and in the carrier state, but in the acute cases the time of disability is materially shortened. If infection is due to the Sonne form of dysentery bacillus, a favorable response may not be encountered as the organism is occasionally sulfa-resistant. The salmonella group of bacilli responds poorly to chemotherapy with the sulfonamide preparations; in fact, most types of typhoid and paratyphoid infection are completely resistant. The proteus group of bacilli, which may be considered as causative agents in the production of diarrhea at times, is usually susceptible to sulfa therapy, but certain strains may remain completely resistant. The cholera bacillus has not proven susceptible. To secure a favorable effect from the treatment of any of these intestinal infections it is essential that adequate amounts of the sulfonamide drug selected be given for seven to ten days. If no beneficial effect has occurred in this length of time, none may be expected with further treatment. In cases of therapeutic failure, changing the form of the sulfa preparation in order to carry out further treatment will not prove successful. In cases of relapse, retreatment is occasionally rewarded with success.

The use of sulfonamide medication in cases of diarrhea from which no causative organism has been recovered from the stool is often rewarded with success and should be tried. Doubtless the majority of the cases of this type which responded to therapy are primarily bacillary in origin. This same form of medication has been popular in the management of ulcerative colitis and as each new form of sulfa preparation makes its appearance and is tried in the treatment of this disease, elaborate claims are made as to its beneficial effects. Gradually it has become apparent that the sulfa drugs do not cure this disease and rarely produce any lasting benefit. Symptomatically some patients improve and occasionally the mucosal ulcerations show a tendency to heal, due to a reduction in the bacterial flora present in the bowel which are apparently causing a systemic reaction to infection. Consequently these drugs should be tried in selected cases exhibiting evidence of chronic infection. They may be given for long periods of time without producing harmful effects.

The oral and intravenous administration of sulfathiazole and sulfadiazine in the management of perforating cases of appendicitis is now an established procedure and has materially reduced the mortality and the incidence of complications in this common disease. Active inflammation of the appendix may be curtailed and threatened perforation may be prevented. When perforation into the peritoneal cavity has developed, this drug therapy will aid in the localization and walling off of the inflammatory process and in the prevention of diffuse peritonitis. Similar beneficial effects may be obtained from sulfa therapy in other types of intestinal perforation, such as from a duodenal ulcer or from a diverticulum of the colon. Statistics show that the prophylactic use of sulfonamide drugs as a preliminary procedure in preparing the bowel for surgery, particularly the colon, has tended to reduce the operative mortality and also the incidence of postoperative complications which are of an infectious nature. The use of these drugs for this purpose is now a standard surgical procedure. However, the indiscriminate introduction of sulfa compounds into abdominal wounds has now been largely abandoned.



CLINICAL CONFERENCE

The Neurology of Alcoholism

Ephraim Roseman,* M.D., and Charles D. Aring,* M.D.: According to Dr. Roger Lee,[11] "It is an old saying that alcohol is a highly inflammable substance whether you apply a match or a word to it." Through the ages alcohol has been used to allay fear and insecurity, to neutralize frustration, for emotional release, and as a social catalyst and aphrodisiac. Alcoholism evolves from numerous factors, including, to be sure, idealization of drinking in tradition, custom, and mores. In what follows we will attempt to summarize briefly the more important neurological complications as we know them today that are associated with acute and chronic alcoholism.

Alcoholism in Differential Diagnosis of Coma

Alcohol is a common cause of coma in admissions to a general hospital. In a study of patients admitted in coma to the Boston City Hospital,[5] alcohol was responsible in 59.1 per cent of 1,167 cases. It is well to know that 2 per cent of patients admitted in alcoholic coma die.

Alcohol and Trauma

Coma may of course be precipitated by an injury to the head of an inebriated individual; it is common for subdural bleeding to occur in association with alcoholism. Bleeding beneath the dura usually follows shearing off of certain of the bridging veins which extend from the dura to the venous sinuses. Alcoholics obviously have a propensity for trauma; however, some investigators[3] have determined that the vitamin content of the blood, including vitamin C, is lowered in the patient addicted to alcohol. Chronic abuse of alcohol may possibly lower the threshold to extravasation of blood. In relation to this point it may be mentioned that scorbutic children suffer subdural hemorrhage, as well as hemorrhage of other types on slight trauma.[10] It is suggested that there may be a mechanism common both to the alcoholic and scorbutic which may dispose toward the production of certain neurologic complications of the hemorrhagic variety.

Medico-Legal Aspects of Drunkenness

In the wake of the strong desire for quantitation and standardization that has for long affected medicine, there has been a tendency to treat the alcohol content of the blood as a sort of slide-rule in the diagnosis of drunkenness. It has been thought by some that the level of blood alcohol could be equated with clinical intoxication. There are two main fallacies with this notion: As yet there is no thoroughly reliable method for determining the blood alcohol, and, regardless of the reliability of method, bemusement with the blood alcohol usually is not associated with respect for the adaptative capacity of the central nervous system.

The phenomenon of adaptation occurs not only to alcohol but also to other substances—for example, sedatives and analgesics. The question of adaptation of the central nervous system to alcohol is a complex one, which has been thoroughly considered both experimentally and clinically in the studies of Mirsky, Piker, Rosenbaum, and Lederer.[17] It has been known for years that the symptoms of alcohol-

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Table 1.—*Causes of Coma as a Presenting Sign and Their Mortality. (From Solomon and Aring, 1935)*

Disease	Number of Cases	Per Cent Total Comas	Per Cent Non-alcoholic Comas	Cases of Group Ending Fatally	Per Cent of Group Ending Fatally
Alcohol	690	59.1		14	2.0
Trauma	152	13.0	32.0	48	31.5
Cerebral vascular lesions	118	10.1	24.7	91	77.1
Poisoning	33	2.8	7.0	3	9.0
Epilepsy	28	2.4	6.0	0	0.0
Diabetes	20	1.7	4.2	11	55.0
Meningitis	20	1.7	4.2	20	100.0
Pneumonia	20	1.7	4.2	18	90.0
Cardiac decompensation	17	1.4	3.5	12	70.6
Exsanguination	10	0.9	2.1	10	100.0
Central nervous system syphilis	7	0.6	1.4	0	0
Uremia	7	0.6	1.4	7	100.0
Eclampsia	7	0.6	1.4	3	42.8
Miscellaneous	38	3.2	8.0	26	68.4
Total	1167	100.0	100.0	263	22.5%

ism are most obtrusive with a rising blood alcohol than when it is falling. Sometimes it is forgotten that different people respond variously to identical blood alcohol concentrations; such factors as environment, both external and internal, emotional disturbances, the form in which alcohol is ingested, as well as the phenomenon of adaptation are all considerations.

Mirsky and his co-workers used hepatectomized and normal rabbits in their experimental studies of the adaptability of the central nervous system to alcohol. It was found that when the concentration of blood alcohol was raised very slowly, relatively high blood levels were obtained without the development of the signs and symptoms of intoxication. Adjustment may be made by the central nervous system to high concentrations of alcohol if adequate time is permitted for compensations to occur.

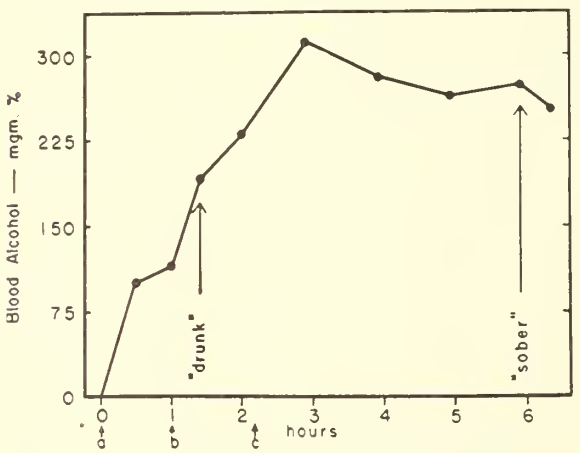


Fig. 1.—The blood alcohol concentration consequent to drinking at (a) 1.0 gm. per kg., (b) 0.25 gm. per kg., and (c) 0.25 gm. per kg. The point at which the patient revealed the signs and symptoms of alcoholic intoxication, and the point at which the patient subsequently became sober, are depicted by arrows. (From Mirsky, Piker, Rosenbaum, and Lederer, 1941.)

Studies in man yielded comparable results. Figure 1 illustrates that the subject became "drunk" at a blood alcohol level of 200 mg. per cent within a period of less than two hours after initiating measured drinking. Drunkenness occurred with a rising blood alcohol. However, at the end of the six hours when it was determined by clinical criteria that the patient was "sober," the blood alcohol level had risen further to approximately 260 mg. per cent. This experiment may be repeated with analogous results in various persons or in the same person. The administration of metrazol may profoundly stimulate the central nervous system and restore function to some degree, at even higher concentrations of blood alcohol than is possible otherwise.

Mirsky, Piker, Rosenbaum, and Lederer summarized their studies as follows: "It is apparent that, given a blood alcohol of 200 mg. per cent or higher, the only deduction that is permissible is that the subject may have been drunk at some time up to the moment the blood sample was drawn, and not necessarily that the subject was drunk at that moment, since the quantity of alcohol at any given time does not serve as a fixed and specific indication of the presence of symptoms."

It has been demonstrated quite clearly that the level of blood alcohol may not be equated with the diagnosis of intoxication. As is usually the case the organism striving to maintain homeostasis is difficult of quantitation; and, as always, it takes a man and not a machine to understand mankind.

Psychodynamic Aspects of Alcoholism

Many studies have been made of the personality of the alcoholic, which in most features resembles that pertaining in other types of addiction. A fundamental difference between the normal and the addict is that the latter demands more than physical satisfaction from the substance to which he is addicted; in addition he requires security and the assurance of self-assertion. The addict is an impulsive, he sacrifices the future for the present instead of the other way around: he must have what he desires immediately and there is no resisting the urge. Kleptomania is an analogous type of impulsive behavior, and may be thought of as theft addiction. Food addiction is in the same category; food is devoured impulsively in the attempt to get something more than the physical satisfaction from it. Persons addicted to drugs are of the same order, but here there is the complication of the added chemical effect; the need for increasing doses of a drug has a physiological basis as well as a psychological one. As long as a drug remains protective, it is not an addiction; for the addict the drug has a subtle, imperative meaning. In him dependence becomes so overwhelming as to nullify all other interests.

The problem of addiction may be found in the nature of the gratification sought, the need to satisfy certain infantile longings especially for security and for the maintenance of self-esteem simultaneously, for which the normal has developed a more mature technique than that of taking something in the mouth or subcutaneously. The reasons addicts act in the manner that they do may be found in the story of their psychological development. The origin and the nature of addiction are not determined by the chemical effect of the drug but by the psychological structure of the patient. Possibly the most readily obvious proof of this is the fact that persons may become addicted to completely inert substances such as placebos.[6]

So it may be said that addicts are those for whom the drug or whatever it may be has a special significance. For them it means the hope of fulfillment of deep, subconscious desires, more urgently felt by them than are the sexual or other instinctive longings by the normal personality. Parenthetically, adult sexuality is rather disorganized in the addict. Extraordinary regression occurs and we see the manifestations of many of the stages of infantile sexuality (oedipus and masturbation conflicts, and especially pregenital impulses).

The relationship between addiction and manic-depressive states is quite clear. The period of elation

obtained with a drug may be looked on as an artificial mania. In the final stages of addiction the patient lives in goalless, alternating states of elation and "morning after" depression, corresponding to the alternation of hunger and satiation in the mentally still undifferentiated infant. There occurs an increasing insufficiency of the elation achieved so that larger and larger quantities of drug become necessary at shorter and shorter intervals. As the periods of elation become shorter, the depression becomes more nearly permanent.

The use of alcohol is characterized by the fact that inhibitions are removed from consciousness before the instinctual impulses (in vino veritas). A measure of relief is obtained by the ingestion of alcohol, particularly if the internal censor is a very strict one. This part of the personality, sometimes termed the superego, has been defined as that part of the mind soluble in alcohol. Alcohol has been extolled for its power to banish care: barriers and obstacles seem insignificant, and gratification near. The reason for reverting to alcohol is the existence of external frustrations or internal inhibitions, and among the latter, depressive inclinations are of the greatest importance. When the misery is at an end, the drinking may or may not be halted. If it is not, such persons are termed alcoholics. They partake of the personality that has been described for addicts in general. In therapy directed toward cure the external frustration or internal inhibition first must be determined, and the patient made aware of its existence and the reason for his specific reaction thereunto.

Several characteristics are rather specific for alcoholism. It has been shown that the person addicted to alcohol has been exposed to difficult family relationships that created frustrations in childhood. These frustrations occur especially during the oral stage of infantile psychosexual development —the earliest stage of development, when the mentally undifferentiated infant obtains most of his gratification by mouth. If he does not receive this normal gratification, his attention will be fixated on the mouth area, and what is termed an oral fixation is developed. In boys who are the anlage of most adult alcoholics, the person who does the frustrating quite naturally is the mother, and the baby turns away from her to the other parent for gratification. All thoroughgoing investigations of the psychology of alcoholism reveal not only typical oral traits but also homosexual ones. It is only necessary to call to mind the numerous drinking customs to confirm this fact. That latent homosexuals, seduced by social frustrations, are fond of alcohol is more probable than that alcohol through its toxic effects is conducive to homosexuality.

In the effort directed toward therapy of the person addicted to alcohol, the psychodynamic principle that the earlier the fixation the more difficult the cure, must be borne in mind. Oral fixation develops early and the chances are good that the process therefore may have become relatively irreversible. It must be determined whether the person resorts to alcohol from external or internal distress, and whether or not he leaves off when he ceases to need it for this purpose.

Periodic drinking is construed along the same lines as the periodicity of the manic-depressive states. Whereas alcohol helps get rid of depressive moods that return in the after effects, in some persons drinking may immediately precipitate depressions.

Pathogenesis of the Neurological Aspects of Alcoholism

In a consideration of the pathogenic mechanism of the neurological sequelae of alcoholism, stress will be laid on the complications resulting from chronic ingestion. In the past it was considered that alcohol had a direct toxic action upon the nervous system. The trend at present is away from implicating a toxic factor in the production of neurologic deficits. Evidence from both the laboratory and clinic seems to favor the idea that many of the chronic neurologic deficits to be described may be reproduced by a diet prolongedly deficient in vitamins, without the ingestion of alcohol. In other words, neurological sequelae are initiated by some chronic metabolic, specifically avitaminotic disturbance. There is evidence that alcohol in a nutritionally deficient subject will cause marked exacerbation in pathological and clinical pictures, or even hasten their inauguration. It has been noted that alcoholic avitaminosis may be due to several factors: (1) Neglect of diet by persons chronically addicted to alcohol: (2) Interference with absorption of vitamins, owing to gastritis or diarrhea and other intestinal changes associated with alcohol ingestion: (3) A normally balanced diet may be rendered inadequate for the alcoholic person even in the presence of normal resorptive function by increased vitamin requirement needed to cover the increased calorie intake: (4) Increased sweating may assist in the depletion of water soluble vitamins: and (5) Alcoholics are prone to infections which have an inhibitory power on vitamins.

Physiopathology of Alcoholism

The physiologic effects of alcohol may be divided into the acute and chronic phases. The ingestion of alcohol causes a rapid dilatation of the vascular bed, including that of the brain, and it is this latter action which to a great extent is the basis for its therapeutic use. The statement, "that the drug affords comfort to the patient should alone suffice as a reason for its use, provided, of course, that it does no harm,"[7] would seem adequately to sum up the therapeutic value of alcohol. Further, as Rolleston[19] states, ". . . it may soothe the last lap of life's troublous transits." If alcohol is taken in excess, the vasodilatation of the cerebral vascular bed may become extreme and lead to stasis, serous transudation, and perivascular hemorrhage.

The brain in cases of acute alcoholism in which the patient survives for less than a day is not very striking. Grossly there is usually hyperemia, espe-

cially of the cortical gray matter, sometimes associated with edema and flattening of the convolutions. In those patients who survive for more than one day, the morbid anatomy may easily escape attention and at most one sees slight perivascular histiocytic infiltration, especially along the small and middle-sized pre-capillary blood vessels of the medulla oblongata. It is important to note that the pathologic changes associated with acute alcoholic intoxication are not specific and may be found in other types of poisoning. The best evidence as to whether or not alcohol is implicated in causing death is the chemical analysis of the brain tissue for alcoholic content.

Alexander[1] has noted that the cause of death in chronic alcoholism is related to (1) trauma, so frequently associated with chronic alcoholism; (2) intercurrent infection, and (3) chronic diseases of the central nervous system which develop from five to forty-five years after the continuous and excessive use of alcohol. The question of trauma has been discussed already in relation to subdural hematoma. It is probable that the incidence of subdural hematoma is more common among alcoholics than in relation to any other single factor. The occurrence of intercurrent infection, such as pneumonia or subcutaneous abscess, is quite high in those chronically addicted to alcohol. It has been shown that the death rate of pneumonia is proportionately higher in alcoholics than in patients having any other classification of disease. Cause of death is frequently attributed to diseases of the nervous system without such exogenous factors as trauma or infection. The pathological picture in this latter group is more or less the same; variations in the clinical picture are due to the fact that the effects may be more marked in one portion of the neuraxis than in another.

There are two main pathological syndromes associated with the disorders of the nervous system in chronic alcoholism. One is the ectodermal involvement described by Adolf Meyer,[16] Greenfield,[9] Alexander,[1] and others, in which changes occur predominantly in the frontal cortex of the brain and the motor cells of the spinal cord. There is an associated degeneration of nerve fibers, predominantly affecting the myelin sheaths. Although these changes may be found in persons suffering from nutritional diseases, such as beriberi or pellagra, it would seem that alcohol invariably produces a much more severe picture so that frequently there occurs associated involvement of the axis cylinders.

The second pathological syndrome is that involving primarily the vascular elements of the central nervous system. Usually it is found in association with a more acute or subacute deprivation. It is characterized by mesodermal proliferation and varicose deformities of the smaller vessels with attendant small hemorrhages. These lesions destroy the nervous parenchyma. These hemorrhagic and degenerative phenomena are particularly located around the ventricular system, and especially the basilar part of the third ventricle. This syndrome was first described by Wernicke[26] under the heading of polioencephalitis hemorrhagica superior and inferior. Alexander, Pijoan, and Myerson[2] have reproduced Wernicke's syndrome experimentally in pigeons by depriving them of vitamin B_1, while allowing them an ample supply of other vitamins.*

The Electroencephalograph in the Study of Alcoholism

The electroencephalogram is of definite value in the dynamic study of the effects of acute alcoholism. However, the electroencephalogram in chronic alcoholism (not associated with acute ingestion) has not been too helpful. Davis, Gibbs, Davis, Jetter, and Trowbridge[8] have shown that the electroencephalographic pattern was only slightly abnormal in a series of chronic alcoholics who were without evidence of neurologic disease and who were not intoxicated at the time the electroencephalogram was taken. They conclude ". . . alcoholics as a group, lie on the borderline as members of society, in that they cannot be classified as either normal or abnormal." Of course, if there are associated vascular disturbances or damage to the neuronal structures of areas accessible to the electroencephalograph, non-specific, focal changes may be noted. Just as with other types of narcotic drugs, the effect of alcohol may be traced with the electroencephalograph. As the stuporous stage is approached, the electroencephalographic pattern becomes slower, and assumes the character of a non-specific stupor record. The electroencephalogram corresponds more closely with the clinical state than it does with the blood alcohol level.

The Cerebrospinal Fluid in Acute and Chronic Alcoholism

Rosenbaum, Herren, and Merritt[21] studied the cerebrospinal fluid of 201 patients with chronic alcoholism who were admitted to the hospital in an acute exacerbation. The majority were admitted in coma. The abnormal findings in the cerebrospinal fluid from these patients with both chronic and acute alcoholism were confined almost entirely to an increase in pressure (25 per cent of 133 patients in whom reliable pressure measurements were made) and an increase in the total protein content (20 per cent of 127 patients in whom this procedure was carried out). These authors attributed the increased pressure to a combination of cerebral edema and dilatation of the cerebral vessels. The increase in the total protein content was somewhat more difficult to explain and they noted that "it is possibly due to an increased permeability of the choroidal and meningeal vessels to protein as a result of injury to the vessels by the alcohol and possibly to degenerative changes in the parenchyma and nerve roots produced by the alcohol." They concluded that the occurrence of any abnormality in the cerebrospinal fluid of alcoholics should make one seriously consider the possibility of the presence of other causes for the abnormality, such as subdural hematoma,

* See also: deWardener, H. E., and Lennox, B.: Cerebral Beriberi (Wernicke's encephalopathy), Lancet, 1:11-17 (Jan. 4), 1947.

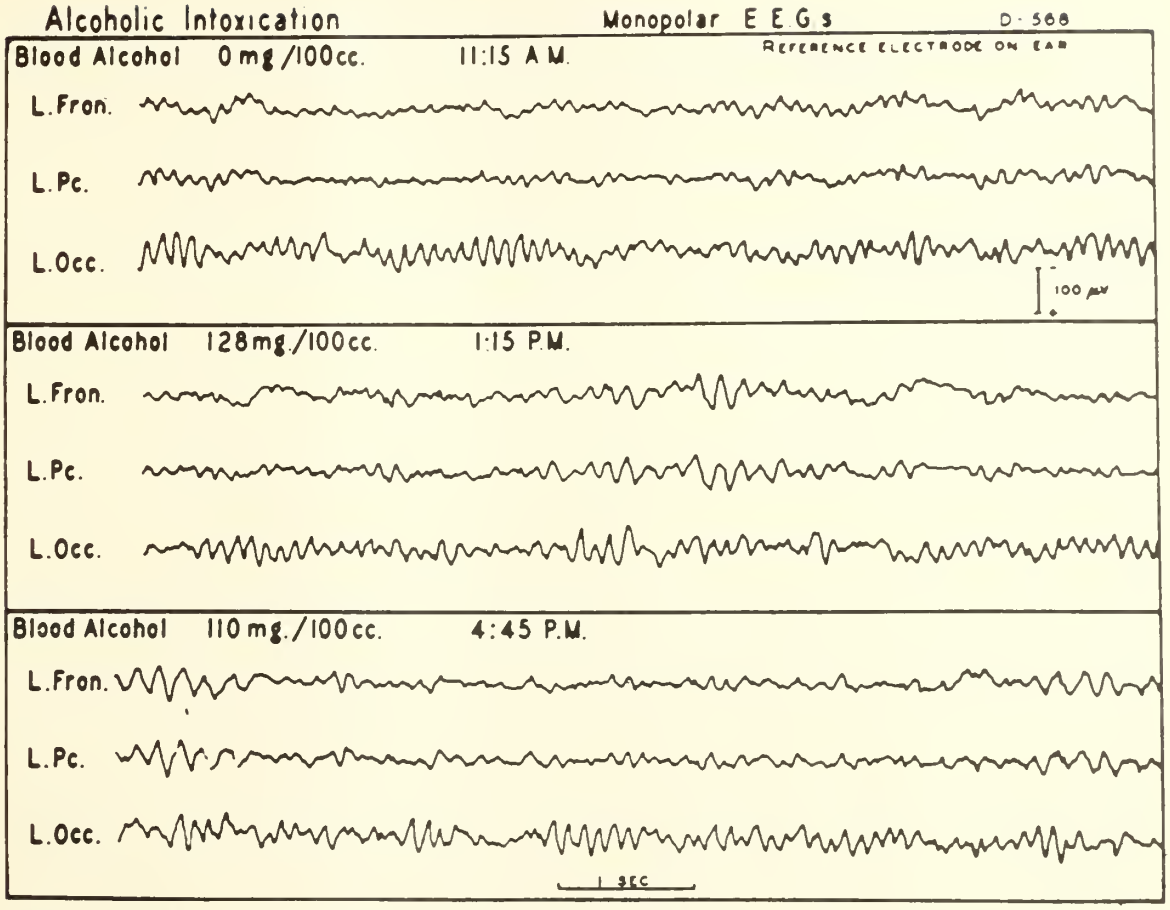


Fig. 2.—Electroencephalograms of one subject taken before drinking, and 1 and 3 hours, respectively, after finishing drinking. Note the 6 cycle episodes in the frontal and precentral records at 1:15 p.m. and at 4:45 p.m. (From Davis, Gibbs, Davis, Jetter, and Trowbridge, 1941.)

brain tumor, or syphilis of the central nervous system. Only after such conditions are excluded should the abnormalities in the cerebrospinal fluid be attributed to alcoholism.

Clinical Neurologic Syndromes Associated with Alcoholism

It is proposed to discuss only briefly the commoner clinical syndromes associated with the ingestion of alcohol over a long period of time. Little time will be devoted to the relatively common, acute syndromes including inebriation and acute psychoses.

It may be said that there are two main groups of clinical pictures, namely psychoses and neuritides. It is not unusual to find a combination of them in the same patient. This combination plus disordered innervation of the eyes produces the clinical picture that is called Wernicke's syndrome. If the brunt of the disease is borne by the peripheral nerves and spinal cord and not the brain, the picture is that of combined system disease not unlike that usually associated with pernicious anemia. The local degeneration of Purkinje cells in the cerebellum produces the syndrome of alcoholic cerebellar degeneration which has been so clearly described by Romano, Michael, and Merritt.[20] The concentration of lesions within the deep white matter, corpus callosum, and corona radiata produces the clinical syndrome described by Marchiafava and Bignami.

It is of considerable importance and therefore reiterated that almost any syndrome associated with chronic alcoholism may be duplicated by nutritional deficiency, for example, peripheral neuritis, combined system disease, and the psychoses of pellagra.

Alcohol and Epilepsy

The harmful influence of alcohol in epilepsy is well known. The Romans had a name for it—*morbus convivialis*. Some sections of this country are familiar with a syndrome known as rum fits. This syndrome is seen in individuals who are really epileptics, and whose convulsive episodes usually are associated with the ingestion of alcohol. In some patients the relationship is so clear that when alcohol is interdicted, no further fits occur. Rum fits usually make their appearance in the sobering-up period, 24 to 48 hours following the ingestion of alcohol. This suggests that the mechanism is related to that which occurs in delirium tremens, since fits and delirium tremens occur in this period when the brain presumably has undergone maximum swelling.

After questioning 1,254 epileptics over the age of 15 years, Lennox[12] reported that 26 per cent admitted the use of alcohol moderately and 6 per cent to excess. These figures are probably no different than those from control groups. In epilepsy, alcohol seemed to be a definite factor in the production of fits in 6 per cent of the entire group of 1,254 patients and in 21 per cent of those who admitted the use of alcohol. In the frequent users, 57 per cent reported that seizures sometimes followed indulgence. In the latter, Lennox reported that alcohol seemed to be a more potent factor in the production of fits in symptomatic epilepsy (that is, convulsions preceded by trauma or disease) than in constitutional or idiopathic epilepsy. Thus, it may be stated as a general rule that alcohol is a definite factor in the production of convulsions in an individual so predisposed, which would appear to require the interdiction of drinking in such individuals.

Delirium Tremens

Delirium tremens is an acute psychosis characterized by disorientation, hallucinations, apprehension, tremors, insomnia, and general signs of toxicity occurring in an individual with a history of prolonged alcoholism. The mechanism involved in the production of this syndrome has been mentioned above.

The mortality rate is reported as varying from nothing to 5 per cent. Therapy has been quite varied, and usually is aimed in two directions: to decrease cerebral edema, and to induce sedation. Therapy has included limitation of fluid, forcing of fluid, cerebrospinal fluid drainage, the routine use of digitalis, hypertonic sucrose or glucose solutions, vitamins orally and parenterally, and sedation of all types. In a series of 524 consecutive cases reported by Rosenbaum, Piker, and Lederer,[23] the mortality rate was 1.7 per cent. Their conclusions are of interest: ". . . regardless of what sort of treatment procedure is used, and so long as no measures are instituted which are actually injurious, adequate general medical and psychiatric care should serve to keep the mortality rate in uncomplicated delirium tremens down to a minimum." It was the feeling of these authors that an important consideration in their relatively low mortality rate was the efficacious use of superficial psychotherapy which included much attention and reassurance, as well as the feeling of confidence engendered in themselves by their persistently low mortality rate.

Peripheral Neuritis

The occurrence of peripheral neuritis in chronic alcoholism is a relatively common phenomenon. Invariably it is associated with the history of rather long-standing nutritional deficiency, and the clinical and pathologic syndromes produced are not unlike those seen in either beriberi or pellagra in which alcohol plays no rôle. Clinically the syndrome is characterized by multiple peripheral neuritis of symmetrical nature and usually most marked in the terminal portions of the extremities and worse in the lower than in the upper extremities. The sensory manifestations include spontaneous pain and paresthesias; typical glove and stocking hypesthesia of the skin are usually demonstrable, associated with tenderness of the deeper structures.

In pellagra not associated with alcoholism the incidence of neuritis is high as determined by clinical method. However, paralyzing polyneuritis as seen in alcoholism is practically non-existent, a feature which favors the theory of direct toxic action of alcohol on nerves.[25] In support of the nutritional deficiency hypothesis in alcoholism, it has been said that the paralytic polyneuritis associated with alcoholism represents the final stage of the long-standing process of deficient nutrition. The nerves have deteriorated gradually until the process has reached the point where it is no longer reversible; for recovery to occur, the nerve cell must form new axones.

In a histological study of peripheral nerves[4] it was demonstrated that myelin sheaths were reduced in number in the nerves of patients with pellagra; reduction was most marked in association with alcoholism. It is noteworthy that in those pellagrins who had been imbibing alcoholic liquors the damage to the nerves was much more severe. Study of morphologic changes in the peripheral nerves leaves much to be desired in the analysis of the syndrome of neuritis. Mild clinical signs may occur in the face of an apparently normal myelin sheath content of the nerve. At present the accurate diagnosis of minimal neuritis is difficult; deviation of the deep reflexes from normal is probably the most reliable single sign of peripheral neuritis. Spontaneous pain and muscle tenderness in the limbs may be present when the myelin sheath content of the nerve is normal.

Combined System Disease

The occurrence of subacute combined degeneration of the spinal cord associated with pellagra is well known. An identical picture may be produced in chronic alcoholism; invariably there is an associated nutritional deficiency. Again both the symptomatology and the pathology in the changes are more severe when there is the additional factor of alcoholism. Combined system disease is invariably associated with multiple peripheral neuritis. The clinical picture is not unlike the combined system disease which is most frequently found in association with pernicious anemia. Not infrequently there is an associated macrocytic anemia and achlorhydria. All forms of subacute combined degeneration of the cord respond well to adequate therapy with liver extract.

Korsakow's Syndrome

The combination of polyneuritis and a peculiar type of psychoses in an alcohol addict constitutes the syndrome described by Korsakow. In addition to the multiple symmetrical peripheral neuritis, the mental picture is characterized by confusion, disorientation, loss of more recent memory, and the tendency to confabulate. There is nothing specific

TABLE 2.—*Treatment Received by Fifty Patients with Korsakoff Psychosis. (From Rosenbaum and Merritt, 1939)*

Treatment	Status of Patient			
	Dead	Completely Recovered	Incompletely Recovered	Still in Institutions
No special therapy	11	5	3	3
Diet high in calories and vitamins	4	0	0	0
Diet high in calories and vitamins plus liver extract intramuscularly	7	3	3	4
Diet high in calories and vitamins plus vitamin B intravenously	0	4	1	2
Total number	22	12	7	9

about this mental state which may be seen in association with toxicities or with brain disease of many types. It is probably not too well recognized that the mortality rate in Korsakow's syndrome tends to be quite high. Marcus [14] reported mortality of 30 per cent, and the rate of complete recovery was 20 per cent. In the report by Marchand and Courtois [13] the outcome was fatal in 55 per cent. In the cases reported by Rosenbaum and Merritt,[22] the mortality was 44 per cent, and it was definitely higher for women than for men, and increased with age. Rosenbaum and Merritt concluded that "intensive dietary and vitamin therapy apparently is of great significance in regard to prognosis as to life and complete recovery." It is not the only factor, however, since 11 of the 22 patients who received no special therapy lived, but it was undoubtedly a life-saving measure in those severely afflicted patients who recovered.

Wernicke's Syndrome

Wernicke [26] described a disorder which he termed polioencephalitis hemorrhagica superior and inferior. It was notable for proliferation and varicose deformity of small vessels associated with small hemorrhages and subacute necrosis of the parenchyma, the lesions being located predominantly around the ventricular system and especially the basal part of the third ventricle. This syndrome has been produced in pigeons fed on a vitamin B_1 deficient diet though the birds were amply supplied with the other vitamins. It could not be reproduced experimentally with vitamin C deficiency. Clinically the syndrome is characterized by clouding of consciousness, ophthalmoplegias, pupillary disturbances, and peripheral neuritis. A galaxy of neurological and psychiatric phenomena may be present.

Marchiafava-Bignami Disease (Primary Degeneration of the Corpus Callosum)

This syndrome was first described by Marchiafava and Bignami in 1903, and there have been more than 50 cases reported in the literature. Up until 1936 all cases of the disease occurred in native Italians. The first American case was reported in 1937 in an Italian who had moved to Boston. The only occurrence in an individual of non-Italian stock was reported by Nielsen and Courville [18] in 1943. The pathologic findings are usually limited to necrosis of the mesial zone of the corpus callosum with sparing of the dorsal and ventral margins. The necrosis varies from softening and discoloration to cavitation and cyst formation. In the majority of cases the rostral portion of the corpus callosum is said to be affected first, and the more caudal regions later. In addition lesions of the anterior commissure, central semi-ovale, subcortical white matter, long association bundles, and middle cerebellar peduncles are not uncommon. The lesions tend to be bilaterally symmetrical and to spare the internal capsule, corona radiata, and the subgyral arcuate fibers. The gray matter is unaffected.

Clinically the disease seems to run a subacute to chronic course for three to six years. No case has been reported in which the diagnosis was made before death. The clinical picture consists of focal and general signs of cerebral disease, including mental symptoms which at times are extreme, convulsive phenomena, tremors, dysphasic disturbances, and

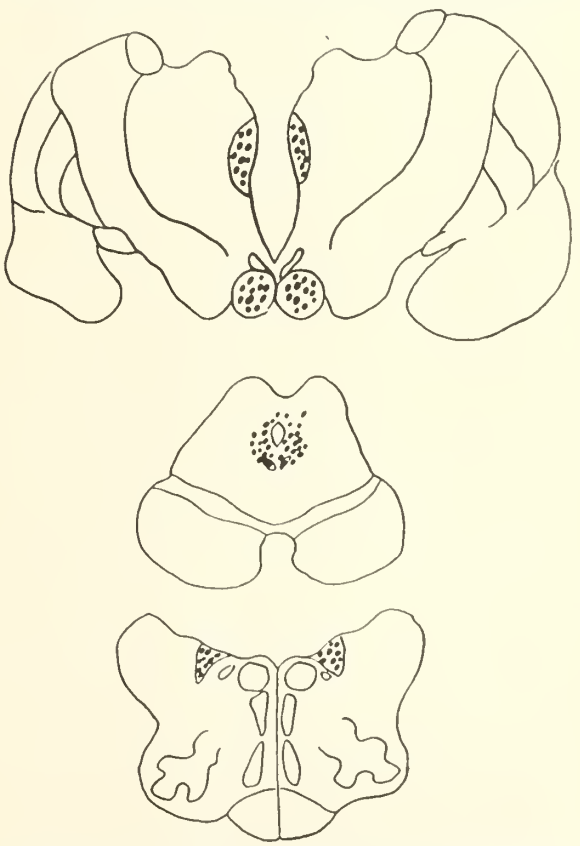


Fig. 3.—A schematic diagram showing the distribution of the lesions in Wernicke's disease. Note the lesions in the paramedian nuclei of the thalamus, in the mammillary bodies, in the periaqueductal region of the midbrain, and in the dorsal (pneumogastric) nuclei of the vagus. (From Alexander, L., Am. J. Path, 16:61-69, 1940.)

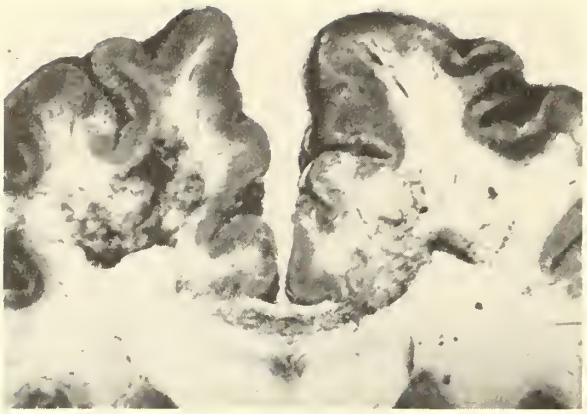


Fig. 4.—Marchiafava-Bignami's Disease. Section through anterior limb of internal capsule, showing extensive symmetrical lesions in subcortical white matter as well as in the corpus callosum. (From Merritt and Weisman, 1945.)

transient hemiparesis, and other motor disability. The occurrence of such symptoms in an elderly Italian male with a history of alcoholism, especially if he drinks Italian red wines should make one suspect this syndrome. The disease has never been seen in women. In the one non-Italian case reported by Nielsen and Courville, it is of interest to note that the patient was addicted to red wine. In those cases which have been carefully studied, there has been noted a gross dietary insufficiency which as Merritt and Weisman [15] point out may of itself lead to demyelination and necrosis of nervous tissue. The latter concluded that Marchiafava-Bignami disease "is considered a form of chronic alcoholic encephalopathy, for which an inadequate diet and prolonged alcoholism are necessary antecedents."

Alcoholic Cerebellar Degeneration

Alcoholic cerebellar degeneration has only recently been recognized; previously it had been described under the intracerebellar atrophies. Until 1933 only 14 cases had been reported. Since the appearance of the paper by Romano, Michael, and Merritt,[20] in 1940, the recognition of this disease has increased considerably. These authors showed quite definitely that alcohol or an associated nutritional deficiency or both were significant in the development of this syndrome, which resembled both clinically and pathologically the cerebellar disturbance previously described as cortical or intracerebellar atrophy.

The clinical picture is characterized by a slowly progressive cerebellar disorder beginning after middle age. In contradistinction to some other cerebellar syndromes there is no familial history of similar disturbance. The chief complaint is usually difficulty in walking, and on examination the signs of cerebellar deficit are symmetrical and most obvious in the lower extremities. The gait is stiff and the patient walks with the feet placed wide apart. Usually there is no nystagmus, but frequently there is dysarthria. Incoordination of the upper extremities is noted in some cases. Pathologically this syndrome is characterized by gross atrophy of the cerebellum, particularly the superior portion of the vermis and the quadrilateral lobule. On microscopy there is found a relatively absolute disappearance of the Purkinje cells of the cerebellum.

Neurologic Defects Associated with Contaminants of Alcohol

Alcohol frequently contains a denaturant. Here it is proposed to discuss briefly only two: triorthocresyl phosphate and methyl alcohol.

"Jake" Paralysis (Jamaica Ginger Palsy)

Jamaica ginger extract was used as an alcoholic beverage prior to March and April of 1930, when paralysis attributable to a denaturant in the extract appeared simultaneously in several localities throughout the country.[5] Jamaica ginger extract contains 70 per cent alcohol. The particular batches which produced the neurologic disease were adulterated with 2 per cent triorthocresyl phosphate.

The clinical syndrome of Jamaica Ginger Palsy was characterized by acute and severe gastrointestinal disturbances shortly after ingestion and by the appearance of multiple, symmetrical, generalized peripheral neuritis within seven to fourteen days. In chronic stages the picture was not unlike that of amyotrophic lateral sclerosis. Pathologically it was characterized by hyperplastic fibrosis of the small arteries and capillaries which apparently developed in the latent period (about 14 days) between the ingestion of the poison and the appearance of neurologic signs. The cresols whether ingested or applied to the skin eventually affect vessels. The degeneration in muscles and nerves as well as in the central nervous system may be related to a degree to the contiguously affected capillaries.

Methyl Alcohol and Optic Atrophy

During the late war, cases of methyl alcohol poisoning were reported associated with the drinking of "buzz bomb juice" and other non-standard alcoholic beverages which had been adulterated with methyl alcohol. The clinical picture is usually characterized by a rapid occurrence of blindness, with the associated pathologic picture of optic neuritis.

Treatment

In concluding we may allude briefly to treatment. It would seem unnecessary to note that alcohol must be interdicted in all of the disorders which have been mentioned. In almost any case the withdrawal may be performed abruptly if supportive therapy is attentive. The latter consists rather more of concern with nutrition than with sedation. The patient must receive adequate nutrition which is ideally administered in a thoroughly nutritious, well balanced diet. In any case probably it is well to reenforce the diet with vitamins, most effectively administered in intramuscular liver extract. If sedatives may not be avoided, paraldehyde is surely the drug of choice,

since its action is somewhat analogous to that of alcohol, and its margins of safety are quite wide.

Everyone is aware that the cure of alcoholism is difficult to attain. If the physician feels hopeful in this regard he should ask for the evaluation of his patient by a psychiatrist entirely familiar with the psychodynamics of alcoholism. Most able psychiatrists are wise enough not to attempt the *cure* of persons whose psychosexual development has been largely halted at infantile levels.

Even though cure may not be a goal, symptomatic relief may be feasible. In this field of endeavor the organization that has the name Alcoholics Anonymous has rendered a very great service indeed; it is only fair to say that the enlightened psychiatrist has sought the assistance of this group quite often for his alcoholic patients.

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CALIFORNIA MEDICAL ASSOCIATION

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NOTICES AND REPORTS

Woman's Auxiliary Reports on Year's Activities

Believing in the wisdom of the words of Dr. Stephen E. Gavin of Wisconsin, who recently told the women's auxiliary to the medical association in that state that "the wives of doctors are admitted to be the most powerful and tactful force between the medical profession and the public," the Woman's Auxiliary to the California Medical Association during the past year has exerted itself to expand and strengthen that force in California.

This was the keynote of the annual report which was delivered by Mrs. H. E. Henderson, president of the Auxiliary, to the C. M. A. at its 76th Annual Convention.

As evidence of the increasing recognition of the value of women's auxiliaries to medical associations, Mrs. Henderson noted that at the time of the American Medical Association convention in San Francisco last year, it was reported that the National Auxiliary's office was to be moved to the A. M. A. headquarters in Chicago and that the Trustees of the A. M. A. thereafter would meet with the Board of Directors of the Auxiliary to cooperate in planning the program of the Auxiliary.

Mrs. Henderson noted in her report that recognition already had been given "by the California Medical Association to its Auxiliary by its offer to print and mail our magazine, *The Courier*." The Auxiliary's president said that the members are "very proud of our bi-monthly magazine, which has a handsome cover in colors and about 14 pages of contents. We have received a number of compliments on it from other state auxiliaries."

Reporting on the organization of the California Auxiliary, Mrs. Henderson said that 302 members have been added in the past year, bringing the total to 3,116. The Auxiliary has local auxiliaries to 25 of the 40 county medical associations in the state, with membership ranging from ten in the smallest to 950 in the largest.

Reporting further on the county organizations, Mrs. Henderson said:

"In Los Angeles County there are now three branches, since the San Fernando Valley Branch of the Los Angeles County Medical Society has recently asked for an Auxiliary of its own, and an enthusiastic group of young women have organized there. If all the County Medical Societies took an equal interest, all their Auxiliaries would be strong. A few of the smaller ones are not. Merced Auxiliary has not recovered from its war difficulties and has not held a meeting for more than a year, so it is not now counted in our numbers. Tulare, Riverside, Ventura, and San Luis Obispo are struggling, principally for lack of encouragement and direction from their County Medical Societies. I do not say this in a spirit of censure, but because I wish to bespeak your help for them. San Bernardino County is the only large county which does not choose to have an Auxiliary. All the others are very active and we have had a wonderful growth in membership. One Auxiliary, that in Humboldt County, has a membership of 36 while its medical society has 37 members. This is a record which we all wish we might approach."

As to political activities, Mrs. Henderson said:

"We have been very much interested in legislation. San Diego and San Joaquin counties have had regular Study Groups on the subject, and Riverside has become a study group as a whole, its members making reports on national and state compulsory health insurance plans, on voluntary plans, and on the A. M. A. Ten-Point Program. All report programs at their regular meetings on some or all of these subjects, and local members are active in debates and programs of other women's groups. The chairman of the Pasadena Branch, Los Angeles County, has spoken more than 100 times to various groups against compulsory health insurance plans. Four County Auxiliaries helped their Medical Socities in active legislative campaigns last summer. Another has furnished arguments against the Warren plan to its Republican Central Committee and its

legislators. Sacramento and San Diego counties collected $1,375 in campaign funds from their doctors, and Alameda and Sacramento counties mailed out 91,500 pieces of campaign literature to patients over their doctors' signatures."

Mrs. Henderson said that at the suggestion of the Advisory Committee of the C. M. A., the Women's Auxiliary has "worked through our clubs, especially the Parent-Teacher Association, so that they would not again endorse the compulsory health insurance programs." As to the present attitude of the California Congress of Parents and Teachers, Mrs. Henderson said that through conversations with officials of that organization she has learned that they would be interested only in a health bill which would provide free physical examinations for all children. "Since the present [Warren plan] bill does not do this, they will take no action on it," the Auxiliary's president said. On the other hand, she said that "the California League of Women Voters has endorsed the policy of compulsory health insurance but does not approve the present bill because it does not go far enough."

In concluding her report on the political activities of the Auxiliary, Mrs. Henderson said: "I think I can safely promise that the members of the active Auxiliaries in this state will watch the actions of these organizations and do their best to influence them in what they think is the right direction."

Reporting on the efforts of the Auxiliary to collect money for the Medical Benevolence Fund, Mrs. Henderson said that she had received a report from the Auxiliary's Medical Benevolence chairman that "considerable ignorance of the meaning of Medical Benevolence has been encountered among doctors whose wives are not members of the Auxiliary and in doctors who are not married." The committee chairman further reported that although the Medical Benevolence Committee had taken for granted that the members of the C. M. A. were informed, "unfortunately this is anything but true."

The Auxiliary president said that she called this report to the attention of the C. M. A. "simply because I think perhaps you are unaware of this condition and will wish to do something to correct it."

"For total philanthropies," Mrs. Henderson continued, "the Auxiliaries have raised and donated over $6,000, including money for student loan funds, community chests, the various national health associations, the Red Cross, charity hospitals of several types, for the Public Health League, the Chaplain's Fund, Girl Scouts and children's camp funds, and for an audiometer for the schools of Santa Cruz County."

She concluded her report by presenting a check for $2,609 for the Medical Benevolence Fund.

In Memoriam

Blum, Stanford. Died in San Francisco, May 27, 1947, age 74, of a heart attack. Graduate of the University of California Medical School, Berkeley-San Francisco, 1896. Licensed in California in 1896. Doctor Blum was a member of the San Francisco County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

✣

Luton, George Roscoe. Died in Santa Barbara, May 19, 1947, age 67, after an illness of several months. Graduate of the Medical Faculty of Trinity University, Toronto, Ontario, 1904. Licensed in California in 1905. Doctor Luton was a member of the Santa Barbara County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

✣

Maghy, Charles Alford. Died in San Diego, April 27, 1947, age 61. Graduate of the University of Illinois College of Medicine, Chicago, 1905. Licensed in California in 1920. Doctor Maghy was a member of the San Diego County Medical Society, the California Medical Association, and the American Medical Association.

✣

Smith, Lloyd Ernest. Died in Glendale, May 2, 1947, age 58, of a heart attack. Graduate of the College of Medical Evangelists, Loma Linda-Los Angeles, 1925. Licensed in California in 1925. Doctor Smith was a member of the San Bernardino County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

NEWS and NOTES

NATIONAL • STATE • COUNTY

LASSEN

Plans are under way in the Tuberculosis Service of the California Department of Public Health to install a **tuberculosis case register** in the part-time health department of Lassen County. If this trial proves successful, case registers may be set up in other part-time health departments in the State.

LOS ANGELES

Dr. George V. Webster, Pasadena, who headed one of the Navy's plastic surgery units during the war, addressed the Pomona branch of the Los Angeles County Medical Society recently at the Pomona Valley Community Hospital, on the subject "Plastic Surgery of the Face as Seen in War and Civilian Life."

Appointment of **Dr. John N. Osburn** as chief surgeon for the Santa Fe Coast Lines Hospital at Los Angeles was announced recently by E. E. McCarty, chairman of the hospital's board of trustees. Dr. Osburn has been chief of the Eye, Ear, Nose and Throat Department at the hospital since 1924.

Dr. Richard P. Forinash, who during the war served in the Navy, has recently begun the practice of medicine in Lancaster where he is associated with Dr. W. R. Senseman in offices in the Community Hospital. Dr. Forinash is a graduate of the University of Tennessee Medical School.

MONTEREY

Dr. Margaret Swigert, for many years a practicing physician on the Monterey Peninsula, left recently for Holland where she is serving as a delegate to the **International Medical Women's Conference** in Amsterdam. En route, Dr. Swigert attended the centennial convention of the American Medical Association in Atlantic City.

ORANGE

"A very significant forward step was taken toward bringing much needed **hospital facilities** to Orange County," the Santa Ana Register reports, "when the board of directors of the Orange County Presbyterian Hospital met with the chief of the Bureau of Hospital Surveys, **Dr. Philip Gilman**, and Field Representative William Weeks, appointed by Governor Warren. These officials are now making a state-wide study of public health. Dr. Gilman was chosen for this investigation because of his wide knowledge of health conditions throughout the West, gained as clinical professor of surgery at Stanford University, as a captain in the United States Navy and as a past president of California Medical Association.

"Plans were formulated for an application for funds in excess of a quarter of a million dollars from federal and state appropriations now or soon to be made available. Further close cooperation was pledged by the State Bureau in helping to relieve the serious situation with reference to hospital accommodations in Orange County. The state officers said that plans locally had developed far beyond those in most California communities and praised the work of the board of directors of the proposed hospital which is to be located on a 20-acre site at Newport Beach."

SANTA CLARA

Dr. Douglas Wendt has recently opened an office for the practice of medicine at 1320 Lincoln Avenue in Willow Glen. He returned to San Jose last year following several years in the Army Medical Corps in France, Germany, the Philippines, and Japan. Dr. Wendt, who was graduated from Stanford University Medical School in 1937, interned at the San Francisco County Hospital and was a resident at the Santa Clara County Hospital.

SOLANO

Announcement was made recently by James S. Dean, state director of finance, that a 700-acre site near Vacaville was one of a half dozen in Northern California under consideration for the new $7,500,000 **state prison medical center.** Mr. Dean said two other sites near San Jose are under consideration but did not mention locations of the remaining suggested sites. An appropriation of $5,130,000 already has been made for the medical center, but according to Mr. Dean another $2,500,000 is needed to cover increased building costs.

GENERAL

Terms of the W. W. Norton Company medical **award for book manuscripts** written for the lay public by professional workers in the field of medicine have been altered slightly. Manuscripts may now be submitted at any time, the award not being limited to any one year. The Norton Award offers $5,000 as a guaranteed advance against royalties. Either complete manuscripts or detailed table of contents together with one hundred pages of manuscript may be submitted. Full details of the terms of the award may be secured by writing the publishers, W. W. Norton & Co., Inc., 101 Fifth Avenue, New York 3, N. Y.

Camp Whitaker, the **camp for diabetic children** between the ages of seven and seventeen which operates under the auspices of the University of California Medical School, will be operated again this year from August 3 to August 31. The camp is 60 miles east of Fresno at an elevation of 5,600 feet.

Sixty controlled juvenile diabetics on a regime which will not conflict with the camp program will

be accepted for each camping period. The full charge for a two-week camping period is $35. It is necessary that all applicants share as much of this expense as possible inasmuch as the number of children accepted will be limited by the funds available. Arrangements for special fees may be made through your clinic or the social workers of your county.

Application forms should be obtained from Dr. M. B. Olney, 1429 4th Avenue, San Francisco. Telephone inquiries should be made at SEabright 5113.

An affiliated **"Eye-Bank"** has been organized in **Boston** and is ready to serve the needs of New England. Seven hospitals in the Boston area and one in Maine have already become affiliated with it. The general public in New England is being urged to sign forms, available from the Boston Eye-Bank, indicating their willingness to donate their eyes for use after death.

The National Gastro-enterological Association announces award of first prize in its 1947 Prize Award Contest for the best unpublished contribution on Gastro-enterology or an allied subject has been made to **Dr. Frederic Duran-Jorda** of Manchester, England. Dr. Duran-Jorda's paper on "Histo-Pathology of the Semi-Squamous Epithelial Layer as Found in the Colon" was selected by the judges from amongst 12 entries received from all parts of the world. Certificates of Merit will be awarded to Drs. William Nimeh, Mexico City, D. F.; August Schrumpf and Trygve Kahrs, Porsgrunn, Norway; W. Paolino and G. Boccuzzi, Turin, Italy. The winning paper as well as those receiving Certificates of Merit will be published in the Review of Gastro-enterology, the official publication of the National Gastro-enterological Association.

Membership of the **National Mental Health Foundation** has grown to nearly 3,000 in its first year of existence according to a report issued by Harold Barton, executive secretary. The Foundation is making a drive for community participation through local organizations to tackle the problems of mental illness and mental deficiency, pointing up prevention in the former and effective training in the latter. It is engaged on a study of model legislation to be applied to both fields. One of its major objectives, however, is to improve the standards for attendant training and promotion of a professional organization of hospital and institution attendants.

Because many **physicians holding Indiana licenses** are outside the state and their mailing addresses are unknown, The Board of Medical Registration and Examination of that state has asked that attention be called to a recently passed Indiana law requiring **annual registration** of physicians. Registration this year must be made before the first day of September. The fee for registrants residing outside the state is ten dollars. Further information may be obtained from the Board of Medical Registration and Examination, K. of P. Building, Indianapolis 4, Indiana.

INFORMATION

Metopon Hydrochloride*†

In 1929 with the funds provided by the Rockefeller Foundation the National Research Council, through its Committee on Drug Addiction, undertook a coordinated program to study drug addiction and search for a non-addicting analgesic comparable to morphine. The principal participating organizations were the Universities of Virginia and Michigan, the United States Public Health Service, the Treasury Department's Bureau of Narcotics, and the Health Department of the State of Massachusetts, which brought together chemical, pharmacological and clinical facilities for the purposes of the study. Metopon is one of the many compounds made and studied in this coordinated effort.

Chemically Metopon is a morphine derivative: pharmacologically it is qualitatively like morphine even to the properties of tolerance and addiction liability. Chemically Metopon differs from morphine in three particulars: one double bond of the phenanthrene nucleus has been reduced by hydrogenation; the alcoholic hydroxyl has been replaced by oxygen; and a new substituent, a methyl group, has been attached to the phenanthrene nucleus. Studies made thus far indicate that pharmacologically Metopon differs from morphine quantitatively in all of its important actions: its analgesic effectiveness is at least double and its duration of action is about equal to that of morphine: it is nearly devoid of emetic action; tolerance to it appears to develop more slowly and to disappear more quickly and physical dependence builds up more slowly than with morphine; therapeutic analgesic doses produce little or no respiratory depression and much less mental dullness than does morphine; and it is relatively highly effective by oral administration.

In addition to animal experiments these differences have been established by extensive employment of the drug in two types of patients—individuals addicted to morphine, and others (terminal malignancies) needing prolonged pain relief but without previous opiate experience. In morphine addicts, Metopon appears only partially to prevent the impending signs of physical and psychical dependence. In terminal malignancy, administered orally, it gives adequate pain relief, with very little mental dulling, without nausea or vomiting and with slow development of tolerance and dependence.

The high analgesic effectiveness of oral doses (with the elimination of the disadvantage to the patient of hypodermic injection), the absence of nausea and vomiting even in patients who vomit with morphine or other derivatives, the absence of mental dullness and the slow development of tolerance and dependence place Metopon in a class by itself for the treatment of the chronic suffering of malignancies, and it is for that purpose exclusively that it is being manufactured and marketed.

Metopon will be available *only* in capsule form *for oral administration*. The capsules will be put up in bottles of 100 and each capsule will contain 3.0 mgm. of Metopon hydrochloride. They can be obtained by physicians only from Sharp & Dohme or Parke, Davis & Co., on a regular official Narcotic Order Form, which must be accompanied by a signed statement supplying information as to the number of patients to be treated and the diagnosis on each. The drug will be distributed for *no other purpose* than oral administration for chronic pain relief in cancer cases.

The dose of Metopon hydrochloride is 6.0 to 9.0 mgm. (2 or 3 capsules), to be *repeated only on recurrence of pain*, avoiding regular by-the-clock administration. As with morphine, it is most desirable to keep the dose at the lowest level compatible with adequate pain relief. Therefore, administration should be started with two capsules per dose, increasing to three only if the analgesic effect is insufficient.

Tolerance to any narcotic drug develops more rapidly with excessive dosage and under regular by-the-clock administration. Also, as a rule, the pain of cancer varies widely in intensity from time to time. Pain, therefore, should be the only guide to time of administration and dosage level. Tolerance to Metopon hydrochloride develops slowly. It can be delayed or interrupted entirely by withholding the drug occasionally for 12 hours or for as much of that period as the incidence of pain will permit.

To each physician will be sent a record card for each patient to whom Metopon hydrochloride is to be administered. He will be requested to fill out these cards and return them in the addressed return envelope. He must furnish this record of his patient and his use of Metopon hydrochloride if he wishes to repeat his order for the drug. The principal object of this detailed report is to check the satisfactoriness of Metopon hydrochloride administration in general practice. The physician's cooperation in making it as complete as possible is earnestly solicited.

The limited use of Metopon hydrochloride as described above has been recommended by the Drug Addiction Committee of the National Research Council and the Committee with the cooperation of the American Cancer Society, will supervise the distribution of the drug. The Committee is composed of Wm.

* Methyldihydromorphinone hydrochloride.

† This article on Metopon Hydrochloride was prepared by the Committee on Drug Addiction, Division of Medical Sciences of the National Research Council.

Charles White, Chairman, Washington, D. C.: H. J. Anslinger, Commissioner of Narcotics, United States Treasury Department, Washington, D. C.; Lyndon F. Small, National Institute of Health, Washington, D. C.; and Nathan B. Eddy, National Institute of Health, Washington, D. C. Queries and comments on Metopon may be directed to Dr. Eddy, who will answer them for the Committee.

U.S. Bond Purchase Plan For Doctors Offered

The nation's banks, by arrangement with the United States Treasury Department, are offering to physicians and other self-employed individuals a systematic savings investment plan under which regular monthly deductions may be made from their checking accounts for the purchase of United States Savings Bonds.

Designed to meet the need of physicians for an orderly investment system requiring a minimum of supervision, the plan, which already is in operation, provides that a depositor who wishes to buy a bond each month has only to sign a card authorizing his bank to deduct from his checking account the purchase price of the bond in whatever denomination he chooses. Each month the bank delivers the bond to the customer, whose periodic bank statements show the deductions for payments.

The following table has been prepared by the Treasury Department to show the aggregate of savings and accumulated interest under the "Bond-A-Month Plan":

If you invest each month under the Bond-a-Month Plan	In five years you will have	In ten years you will have
$ 37.50	$ 2,319.00	$ 4,998.00
75.00	4,638.00	9,996.00
150.00	9,276.00	19,992.00
300.00	18,522.00	39,984.00

Letters to the Editor . . .

ASCORBIC ACID WITHHOLDING THERAPY

The possibility of controlling malarial infection by reduced intake of vitamin C (ascorbic acid) is suggested by McKee[3] and his co-workers of the Department of Comparative Pathology, Harvard Medical School.

During the course of malarial studies with monkeys, inoculated with *P. knowlesi*, the Harvard investigators inoculated seven monkeys with spontaneous vitamin C deficiency and an additional group of monkeys rendered deficient by previous feeding on Shaw's[4] ascorbic acid free synthetic diet. In control animals on normal diets containing adequate amounts of ascorbic acid there was usually a rapid increase in the number of parasites in the circulating blood, with death within six to seven days. In the ascorbic acid deficient animals there was only a slow rise in the percentage of parasites with a gradual spontaneous control of the infection. Intramuscular injection of 80-100 mg. of ascorbic acid into these animals was followed by a rapid increase in the number of malarial parasites, with death within two to six days.

The tests indicate that in monkeys a relatively high ascorbic acid titer of the blood stream is necessary for the rapid multiplication of the malarial plasmodium, low titers serving as an inhibiting mechanism. Whether or not this inhibiting action of vitamin C deficiency is due to a direct action on the parasites or to an indirect one through the animal host, is not yet determined. McKee is inclined to attribute it to an indirect action, since attempts thus far to demonstrate the need of ascorbic acid for the *in vitro* growth and multiplication of *P. knowlesi* have been inconclusive.

Studies by Marin,[2] Horvitt[1] and others suggest that the interrelationship between malarial parasites and ascorbic acid is the same in humans and monkeys. If so, ascorbic acid withdrawing therapy may be of future clinical interest.

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BOOK REVIEWS

MENTAL MISCHIEF AND EMOTIONAL CONFLICTS. By William S. Sadler, M.D., F.A.P.A., Consulting Psychiatrist, Columbus Hospital; Fellow of the American Psychiatric Association, the American Medical Association, the American Association for the Advancement of Science; Member of the American Psychopathological Association. 1947. The C. V. Mosby Company, St. Louis.

That this 400-page volume is probably no worse than most works attempting to present modern concepts of nervous illness to the public is the best that can be said for it. There are portions of the book which, to the eye of the reader trained in this field, possess real merit. However, such a reader is no wiser for having read them, while the untrained reader certainly will be unable to discriminate between these passages and the many which are of doubtful value.

In essence, the book attempts to present, from the eclectic viewpoint, the whole gamut of functional nervous and mental diseases, from the standpoint of etiology, symptomatology, and treatment. The presentation is faintly reminiscent of the old fashioned "doctor book" which some of us can remember as occupying a high shelf in the bookcase of our childhood home. I am afraid it will prove equally unfruitful, if not actually dangerous, to its readers.

* * *

FUNDAMENTALS OF CLINICAL NEUROLOGY. By H. Houston Merritt, M.D., Professor of Clinical Neurology, College of Physicians and Surgeons, Columbia University; Chief of Division of Neuropsychiatry, The Montefiore Hospital; Fred A. Mettler, M.D., Ph.D., Associate Professor of Anatomy, College of Physicians and Surgeons, Columbia University, and Tracy Jackson Putnam, M.D., Professor of Neurology and Neurological Surgery, College of Physicians and Surgeons, Columbia University. 1947. The Blakiston Company, Philadelphia. 96 Illustrations. 289 pages. Price $6.00.

This work can be termed a handbook in the practical sense that in a relatively small volume it includes those things which should be encompassed in the knowledge of the general practitioner of medicine regarding the specialty of neurology. It fills a definite need for a text which may be recommended to the medical student on his first contact with clinical neurology, yet will not be outgrown by him even though he should ultimately come to specialize in the field.

The mechanics of the neurological examination is very well covered. There is perhaps more detailed stress on anatomical relationships not too clearly related to the clinical pictures presented; some of this complexity is certainly due to the widespread use of diagrams from a text on neuroanatomy by one of the authors which goes far beyond the clear and simplified presentation provided by this book.

The volume is well bound in a water-resistant cover. The type face and paper are excellent; it is a pity that current standards of workmanship allowed at least the copy seen by this reviewer to be badly smudged with ink in a number of places.

A SURGEON'S DOMAIN. By Bertram M. Bernheim, M.D., Associate Professor of Surgery at The Johns Hopkins Medical School and Visiting Surgeon to The Johns Hopkins Hospital. W. W. Norton & Company, Inc., New York. Price $3.00.

The author, an Associate Professor of Surgery at Johns Hopkins Medical School, dramatizes in this book the many problems that arise during the teaching and training of young surgeons. He emphasizes the hazard to the patients of poorly done surgery and makes a rosy picture of the surgeon's artistry and skill as it is evidenced in a perfectly performed operation.

The political complexities of staff and hospital management which exist everywhere are laid wide open.

The nurse problem, which is now quite acute and will require more consideration as time moves along, the author feels can be solved by less rigid requirements and more pay for student nurses. Those nurses with good educational background and qualifications should be advanced to higher grades of standing and compensation. They might, in a way, assume some of the duties of internes.

The author proposes the institutionalizing of well qualified surgeons, which he feels will enhance the standing of the profession and promote for the patients a healthier concept of indications and technique in the performance of surgical operations. This arrangement exists now in a few instances where full time faculties occupy medical schools. Dr. Bernheim evidently wishes the same procedure for all hospitals.

The author calls attention to the turmoil and unhappiness that envelopes the very well trained young surgeon embarking upon the Sea of Free Enterprise. Many fall into the trap of fee division which evidently exists more or less in various communities. It is an unhealthy situation and should be actively attacked by all agencies. Perhaps one can agree with him that the road can be made easier by the government gliding such a well trained man into an institution established in an out-of-the-way community, subsidized for the purpose of better medical care. This may be on the way right now.

This book will be found interesting in many particulars to all doctors and their patients.

* * *

EXPERIENCES WITH FOLIC ACID. By Tom D. Spies, M.D., Associate Professor of Medicine, University of Cincinnati School of Medicine, Director of the Nutrition Clinic, Hillman Hospital, Birmingham, Alabama. 110 pages. Illustrated. 1947. The Year Book Publishers, Inc., Chicago. Price $3.75.

This is a monographic review of the work recently done on folic acid and of the work done generally on macrocytic anemias by Spies and his collaborators. It is written in a chatty, entertaining, journal-

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Viral Hepatitis and the Public Health*

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THE sporadic type of what is usually known as acute catarrhal jaundice has for years been the type of liver disease most commonly seen in hospital and general practice. Since the patients were usually young and recovered promptly and since the lesion was generally believed to be "duodenal catarrh" with a "mucous plug" in the ampulla of Vater, little serious thought was given to the condition. The occasional patient whose illness was protracted or who succumbed to the disease was regarded as having another ailment variously known as acute or subacute atrophy or nodular ("toxic") cirrhosis. Not infrequently, the most serious types of the disorder were regarded as examples of Weil's disease.

From time to time, various authors have called attention to the fact that the so-called catarrhal jaundice (Jones and Minot, 1923) was of some importance, that it was increasing in frequency and, at times, in severity, and that there might be residua which were pathologically significant. Virchow's conception of the pathologic lesion was challenged more than 50 years ago by Flindt, and about 20 years later Eppinger gave it the coup de grâce by demonstrating that a diffuse hepatitis was present. In spite of these interpretations of the disease, acute epidemic or sporadic hepatitis was not a subject to compel the attention of medical audiences until about five years ago, when hepatitis occurred in a large number of service personnel who had been inoculated with yellow fever vaccine. This experience was not entirely new, since Fox and his associates had encountered similar difficulties in Brazil, but it served as an impetus to a large number of investigative studies which have changed our conception of this supposedly innocuous ailment and have given it the status of a public health problem of first importance.

It is the purpose of this paper to point out that the disease appears to be increasing in frequency and probably in severity, that it may and often does lead to serious hepatic damage which may be progressive and eventually fatal, and that the present widespread use of blood, blood products and parenteral therapy may serve to disseminate the disease even more widely. Finally, it is hoped that a tentative explanation of some hitherto obscure types of chronic diseases of the liver may be advanced on the basis of these newly acquired facts.

HISTORICAL DATA REGARDING EPIDEMICS

The disease seems to have been mentioned by Hippocrates and has probably occurred during every war since the time of Homer. There is a record of correspondence between Pope Zachariah and St. Boniface, in the Eighth Century, concerning an epidemic of jaundice (Hardy and Feemster). Among the earlier epidemics on record are two which occurred in the Mediterranean area (Minorca, 1745; Ligurian coast, 1793) where the disease seems to be perennially active. Following the tradition of being "an old and ugly camp follower," the disease was widely prevalent in the Franco-Prussian War and in the Boer War. There are references to these earlier epidemics in the reports by Fröhlich and Cockayne. In more recent times, epidemics have occurred in the Eastern Mediterranean area in Russia[65] and in the Scandinavian countries, the epidemic of 1927 being especially widespread. The Scandinavian literature contains a graphic account of some of these outbreaks.[7, 10, 21, 80]

The first American epidemic occurred at Norfolk in 1812, according to Blumer, whose account of the spread of the disease in this country is noteworthy.

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important for the historically minded is Woodward's account of the disease in the Union armies during the Civil War, when there were more than 52,000 cases and 226 deaths, a mortality rate of about 0.4 per cent. In World War I, American forces were not seriously affected but epidemics of various sizes continued through and after the war years in this country. An increase in acute yellow atrophy of the liver was noted following World War I (Berglund).

The British forces suffered severely from epidemic jaundice in the Dardanelles campaign of World War I; Willcox reported 4,000 cases and a mortality of 0.4 per cent. British forces in the Mediterranean area were again affected in World War II.[49] The disease began with an epidemic in the beleaguered garrison at Malta (1941-1943).[16] By the time American forces entered the war, the stage was prepared for an outbreak of pandemic proportions. As is well known, there were outbreaks in North Africa, Italy, on the European continent[77] and in the South Pacific Islands. More than 200,000 men had the fully developed disease and many more who suffered from it either did not report sick for various reasons or had the anicteric variety of hepatitis.

The spread of the disease since the war is difficult to appraise since the disease is not reportable in most states. Word of mouth information seems to indicate that its high incidence has continued, and in some states where it is reportable this impression is partially supported by figures.

The mortality in these epidemics deserves especial comment. As Cockayne pointed out years ago, there seems to be a correlation between epidemics of hepatitis and the occurrence of increasing numbers of cases of acute yellow atrophy. The connection was borne out in the Swedish epidemic of 1927[7] and recent figures from Denmark, notably those of Alsted and of Jersild, indicate a high incidence of acute and subacute atrophy during the years 1943-1945 inclusive. The mortality of the epidemic disease is in general due to hepatic necrosis, no matter what term may have been used to describe the disease (Lucké and Mallory). Incidentally, the increased mortality in recent years is reflected in figures from Palestine[12, 41] where the death rate is currently about three to six times that usually reported, a circumstance which may reflect crowding and bad sanitary conditions in that country.

ETIOLOGY

For some time past, especially since the studies of Findlay and MacCallum appeared (1937 and 1938), it has been suspected that the etiologic agent of hepatitis had the principal characteristics of a virus. This view is now supported by abundant evidence, although a virus has never been actually demonstrated, cultured, or grown on natural or artificial media. Two viruses and quite possibly more than one strain of each probably are involved. These two viruses have many features in common but differ in two ways; namely, the length of the incubation periods and their mutual failure to confer a heterologous immunity against infection by the other strain.[32, 33, 61] Before discussing the differences, it may be well to consider the characteristics which they share. They have not been seen with the electron microscope and they have not been successfully transmitted to any animal except man, in spite of extensive trials. There is some evidence, not generally accepted, to indicate that swine have been experimentally infected (Andersen). Neither strain can be detected by any specific laboratory method now available; only development of the disease after inoculation of a human being proves the presence of the icterogenic agent, a fact which has confined the study of these viruses to such observations as could be made on human volunteers.

Both viruses will pass through a Seitz filter and other filters which will retain bacteria. They are among the most resistant pathogens. They are able to withstand freezing, exposure to a temperature of 56° C. for 30 to 60 minutes and long storage in the desiccated state at room temperature. They are not killed by a 1:2,000 solution of merthiolate, by a 0.5 per cent solution of phenol in ether or by a 0.2 per cent solution of tricresol. The ordinary type of water chlorination does not affect them. They may be inactivated by autoclaving, by boiling or by exposure to ultraviolet light.

The essential differences in their behavior are shown in Table I. For the purposes of the consideration to follow, Neefe's[58] nomenclature will be used

TABLE 1.—*Differences Between Infectious and Serum Hepatitis* *

	Infectious Hepatitis	Serum Hepatitis
Fever	+	Rare
Incubation period	20-45 da.	69-150 da.
Transmission by ingested feces	+	—(?)
Parenteral transmission	+	+
Homologous immunity	+ (1 yr. +)	+ (18 mo. +)
Heterologous immunity	—	—
Mortality rate	0.01 to 0.20	0.2 to 20.0%
Morbidity, relapses	++	++

* Modified from Neefe, J. R., Stokes, J. R., and Gillis, S. S.: Hepatitis; immunologic studies, Tr. A. Am. Physicians, 59:142, 1946.

and these viruses will be referred to as virus IH (infectious hepatitis, the naturally occurring disease) and virus SH (serum hepatitis, the artificially transmitted form). For a full consideration of these agents and the data on which differentiation is made, the reader is referred to Neefe's[58] excellent review. Only three additional points of clinical interest will be stressed: (1) virus IH may be transmitted by both enteral and parenteral routes, while virus SH has to date been transmitted only parenterally; (2) the period of viremia extends through much of the long incubation period of virus SH, while it is relatively brief with virus IH, and (3) the pathologic lesions induced by either virus seem to be more or less identical but the over-all mortality due to infection with virus SH is considerably greater.

MODES OF TRANSMISSION

As indicated previously, these viruses are extraordinarily resistant to a wide variety of agents and may be transmitted by various means. The naturally occurring disease dependent on virus IH is probably transmitted by the "intestinal-oral" circuit in most instances. It is most readily propagated in areas where there is crowding and poor sanitation, and direct personal contact seems epidemiologically important. The ordinary epidemic in civilian communities pursues a leisurely course over a period of three or four months;[55, 62] whole families may be affected, the members becoming ill one at a time at fairly regular intervals. In a military command in the field, the spread of the infection may be greatly accelerated.[49] Infection by contaminated water certainly occurs, and if so, many persons will contract the disease simultaneously, as in the Pocono camp epidemic which was carefully studied by Neefe and Stokes. Dissemination by droplet infection is believed to occur;[15] there is also a suggestion that the disease may be spread by food or fomites. The field incidence of the disease is high among military officers who often share china and silver in a mess.[44, 81] Kirk, on the basis of his experience in North Africa, expressed the opinion that flies contaminated by human excreta might spread the disease. It has also been felt that the possibility of transmission by biting insects can not be excluded.

The percentage of persons affected in a community in which epidemic hepatitis is present varies tremendously. The age factor may be important; children and young adults are especially susceptible and there is evidence to suggest some degree of immunity in many persons more than 30 years of age. With contaminated water, mass infection may be the rule (65 per cent in the Pocono camp epidemic). In military personnel in the field, an incidence of 40 to 50 per cent is not uncommon. In some American epidemics cited by Blumer, with normal civilian surroundings and a mixed population, the rates of incidence ranged from 5 to 67 per 1,000. How often the virus IH is transmitted by parenteral means remains unknown: that this may occur is well known, as in the disastrous occurrence cited by Murphy.

The transmission of the SH virus is so well illustrated by the familiar story of the incidents which followed yellow fever vaccination that further amplification seems unnecessary.[35, 79] Contaminated human serum transmitted the virus in this instance. There are some recently reported aspects of the matter which merit some consideration. The first has to do with the rates of incidence when large groups are inadvertently inoculated with material containing virus SH. There is an unpublished report of one recent episode in which a large number of men were inoculated in this manner. Frank hepatitis developed in 49 per cent of the men and 27 per cent had evidence of hepatitis without icterus (established on the basis of hepatic functional tests). Other authors have reported about the same incidence in dealing with smaller groups of persons who were inoculated in this manner.

The second aspect has to do with the matter of accidental inoculation by contaminated syringes and needles and concerns the incidence of jaundice in patients subjected to repeated "sticking" for obtaining samples of venous and capillary blood. In one Scandinavian city, it has been reported that about 30 per cent of all instances of hepatitis occurred in persons who had been in hospitals for various reasons and that the rate of occurrence was in rough proportion to the number of acupuncture venipunctures performed. Among diabetic patients, for instance, the incidence of the disease is extremely high. Selander previously noted this high incidence in diabetic patients and there are, of course, numerous reports of instances of infection in diabetic[19] and chrysotherapy clinics.

Finally, the earlier reports on the relation of jaundice to arsenotherapy for syphilis should be mentioned. Only three of the many reports will be considered. That of Ruge, from the German Navy, indicated that in about one of every three cases jaundice had been preceded by arsphenamine therapy. This fact and a progressively rising annual rate of "arsenical jaundice" which he reported would be interpreted today as probably indicating the dissemination of virus SH by contaminated syringes. The report of Stokes and his associates shows the variability of supposed arsenical hepatitis under conditions which exclude practically all variables except the dissemination of hepatitis virus in the manner mentioned. In at least one British clinic[69] where arsphenamine jaundice was a common development during the second or third month of treatment of syphilis, the jaundice disappeared when individual syringes were substituted for the original multiple injection technic. The importance of the accidental transmission of hepatitis by syringes has recently been the subject of a report by the British Ministry of Health.[53] It is now known that bacteria may survive the usual cleansing and sterilizing procedures employed in many clinics and that the much more resistant virus can do so seems certain. Whether the virus transmitted is of the IH or SH type probably makes relatively little difference; the fact remains that the mechanics of present day medicine and the current use of blood and blood products furnish the greatest possible opportunity for the propagation of hepatitis virus. The long period of viremia for virus SH obviously makes it more likely to be transmitted by artificial means. The frequency of the artificial type of transmission of the disease has been verified by many observers[5, 17, 73] and I know of dozens of instances of this so-called homologous serum hepatitis, some of which have been described elsewhere in connection with hepatitis in wounded men.[74]

Serum hepatitis has been observed after the use of measles[50] and mumps convalescent serum, whole blood, pooled plasma, both liquid and dried, and both yellow fever and pappataci fever vaccine contaminated with icterogenic serum. It has an appreciable mortality, as high as 20 per cent in some series. Middleton mentioned a group of cases observed in the European war front in which the mor-

tality rate was 9.5 per cent. These high mortality rates may reflect in part the condition of the patients (often injured or wounded men) rather than the natural virulence of different strains of virus. The size of the inoculum appears to make little or no difference, since serious hepatitis has followed the administration of 0.01 cc. of the icterogenic agent while much larger doses appear to have produced a hepatitis of no more than the ordinary degree of severity.

While plasma is the commonest means of transmission, whole blood may be solely responsible for transmitting the disease. Bradley's figures from the Emergency Medical Service of Great Britain showed that, for instance, the incidence of jaundice was one hundred times higher in transfused casualties than in those not so treated. At one time, homologous serum jaundice following the use of blood or plasma was the commonest cause of death in the United States army hospitals in England, accidents and pneumonia excepted. So well established has this method of transmitting the disease become that one is inclined to agree with Bradley in the following statement: "When hepatitis occurs 40 to 120 days after the administration of a human blood product or other parenteral therapy, it is almost certainly homologous serum jaundice and must be treated as a disease with an appreciable mortality." The implications in the field of diagnosis and in the selection of jaundiced patients for surgical exploration are obvious. On one gastro-intestinal service of which I have knowledge, eight patients who had homologous serum jaundice were admitted with a presumptive diagnosis of obstruction of the common bile duct or a malignant lesion within the past three months. Schiff has recently commented on this fact and has pointed out the dangers involved.

IMMUNOLOGY

There seems to be a gradually decreasing susceptibility to the naturally occurring disease (virus IH) which develops with age. This is believed to be due to the fact that this virus is sufficiently widespread to immunize most of the population by apparent or subclinical infection during the earlier years of life. The experimentally produced disease in human volunteers confers immunity to subsequent inoculation with the homologous virus for at least a year. There is also an antigenic relation between virus IH strains isolated from cases in widely separated parts of the world, but heterologous immunity to virus SH does not develop.[58] Second attacks of the naturally occurring disease are certainly no more common than second attacks of measles or mumps. Finally, from pools of adult human serum, gamma globulin can be prepared which contains antibodies effective against virus IH and possibly also against virus SH infections.

Little is known about immunity to the latter virus, except that which has been learned by studies on volunteers. One attack confers immunity for 18 months at least. As stated previously, no cross immunity between the two viruses has been demonstrated and certainly there is no increasing immunity to SH virus with age, as is the case with virus IH. There is in fact some evidence to suggest that a previous attack of serum hepatitis renders a person somewhat more susceptible than normal to the naturally occurring disease, whereas the reverse is not necessarily true.[58]

The question also arises as to when and where the serum hepatitis virus originated since the disease appears to be propagated only by artificial means. Neefe[58] has stated that certain persons may at times carry the agent in their blood without ever having had clinical or laboratory signs of hepatitis; this fact has been established by a study of donors to plasma pools which were shown to contain the icterogenic agent. Whether or not the virus of serum hepatitis is a variant of IH virus changed by prolonged adaptation to a human host can only be surmised; the matter of some interrelation is suggested by the sudden appearance of serum hepatitis during a time when the incidence of the naturally occurring disease was increasing markedly. The survival of virus in immune persons and in other persons who have the various lesser residua of hepatitis is a matter of great importance. There is to date no information on any possible animal reservoir of the disease, as is the case with other virus infections. Like amebiasis, the disease appears to be transmitted only from man to man and one must, it seems, postulate both the existence of a human reservoir and the probability of a carrier state. Furthermore, one finds it difficult to explain the phenomena that have just been described unless the reservoir is large and the carrier state is a relatively common occurrence. The matter will remain unsettled until some suitable experimental medium can be found for the propagation of the disease.

CLINICAL COMMENTS ON VIRUS HEPATITIS

The clinical manifestations of both virus and serum hepatitis have been described many times both under their proper titles and as "epidemic" or "catarrhal" jaundice. Only a few less generally appreciated aspects will be considered here. There is a considerable variation in the clinical picture in various epidemics in cases which occur sporadically,[43] and in the severity of individual cases in epidemics.[31] Cervical adenopathy and the appearance of abnormal lymphocytes in the blood have been described in some epidemics but not in others; in some outbreaks, neurologic symptoms have been conspicuous (Lyon; Stokes, Owen and Holmes; Byrne and Taylor). There are records of some highly fatal outbreaks (Sandwith, 1904; Tillgren, 1928) and some with an unusually large incidence of residual atrophy of the liver, both acute and subacute (Alsted, 1947; Jersild, 1945). The coexistence of hepatitis with other infectious diseases (notably malaria and dysenteries due to Salmonella) greatly modifies the clinical course of the disease in the direction of increased morbidity and late relapse. The disease is a much more serious affair in pregnant women and the mortality under these circum-

stances is high, a point on which observers all over the world agree. Mortality rates in various epidemics range from a negligible figure through the average of about 0.2 per cent to 2 per cent or more. These variable features suggest the existence of more than one strain of virus.

The existence of cases of anicteric hepatitis has been fully established; as previously stated, this type of the disease is important epidemiologically and, since it may escape early clinical recognition, it may lead to prolonged illness and permanent hepatic injury. Relapses are extremely important and frequent; they may be clinical or "serologic" only, and as Barker, Capps and Allen have shown, are often precipitated by early resumption of physical activity, by the use of alcohol or by intercurrent infection. I have observed several cases in which jaundice has persisted intermittently over a period of several months before the patients finally recovered.

A word must be said here in regard to liver function tests, which are very important in the recognition of the anicteric type of the disease and of relapses and recrudescence. These appear in a fairly regular order at the onset of the disease and disappear in a roughly inverse order during convalescence (Neefe[59]). The tests which are most likely to remain positive long after the disease has passed are those which have to do with alterations in the plasma proteins; namely, the thymol turbidity test and other flocculation tests. Further reference to these tests will be made in considering means of diagnosing the residua of the disease. The significance of persistently positive flocculation tests has been confirmed by biopsy. Microscopic examination of material obtained by needle puncture may reveal active hepatitis six or nine months after all tests for hepatic function become normal.[57]

Finally, some reference must be made to the recorded disturbances in hepatic physiology incidental to either virus or serum hepatitis. These often are severe, if not as permanent, as those seen in cases of cirrhosis. Among those worthy of mention are: (1) disturbed excretory function for the products of hemoglobin disintegration and for certain dyes, (2) a decrease in the concentration of serum albumin, reversal of the albumin-globulin ratio and a change in the electrophoretic pattern.[52] (3) hypoglycemia associated with symptoms referable to the central nervous system, (4) a prothrombin deficit uncorrectable by the administration of naphthoquinone (vitamin K), (5) failure of synthesis of urea and hippuric acid, (6) retention of estrogenic material normally inactivated by the liver (Gilder and Hoagland), (7) disturbances of lipid metabolism and (8) the appearance and disappearance of vascular spiders. In most instances, these changes are of a temporary nature but they reveal clearly the extent of the hepatic injury. Even the retention of water in body tissues, which is characteristic of atrophic cirrhosis, is duplicated on a considerable scale. During active epidemic hepatitis there are evidence of gross retention of water and chloride in interstitial tissue spaces and indications of diuresis and restoration of the normal amount of tissue fluid during recovery (Labby and Hoagland). This phenomenon is believed to be due to the temporary inability of the liver to inactivate antidiuretic substances formed in the hypophysis.

RESIDUA OF VIRUS HEPATITIS

The residua of virus hepatitis are not completely catalogued in spite of the extensive experience of the last few years, yet enough is known to indicate that many supposedly independent hepatic diseases originate in what was to all intents and purposes an attack of virus hepatitis. Until an experimental animal is available to which the disease can be transferred, some of these supposed etiologic relations must remain on a tentative basis.

It should be emphasized that complete healing of the hepatic lesion is the rule in the great majority of cases. Lucké's studies,[45, 46] which were based on biopsy and necropsy, established this point beyond question and the studies of Roholm and Iversen and of Dible and his associates are, in general, confirmatory.

The cases in which healing does not occur may be divided into four groups: (1) cases in which fulminant hepatitis (acute atrophy) develops; (2) cases in which chronic atrophy or "nodular cirrhosis" develops (3) cases in which a cholangiolitic type of cirrhosis develops, and (4) cases in which minor residua occur. These groups will be considered separately.

Fulminant Hepatitis:

This condition may be described as a fatal form of the disease which pursues its entire course within ten days. Clinically, the condition corresponds to the often described acute yellow atrophy of the liver with which it is probably identical; certainly there are no important clinical or pathologic differences. It is of interest to note that other epidemics in the past have been said to have been associated with a notable increase in the occurrence of this fulminating type of the disease (Ehrstrom, Bergstrand, Bormann). Other authors do not agree that such a correlation exists (Selander). However, the death rate from this cause has risen in this country in recent years[20] (Figure 1).

In cases of this type of the disease, the most striking features are the rapid development of severe hepatic insufficiency, often attended by neurologic findings of great variety, rarely by hypoglycemic convulsive seizures and not infrequently by a hemorrhagic diathesis. At necropsy, the principal findings are those which pertain to the liver; examination of this organ shows an extensive and widespread necrosis of the lobules and complete disintegration of the cellular structure. Lucké and Mallory have described the experience of the United States Army with this condition in the period between August, 1943, and April, 1945. In this period there were 196 deaths from epidemic jaundice; in 53 per cent of the 196 cases in which death occurred, the disease was of the fulminant type. These authors noted that not a single case of fulminant hepatitis was reported

during the 1942 epidemic of hepatitis which followed yellow fever inoculation. In more than half of the cases of fatal fulminant hepatitis which they reported, the disease apparently was due to the transmission of the virus by parenteral means. A number of explanations for the sudden increase in the incidence of fulminant hepatitis have been suggested. A difference in virus strains may be considered or there may be an increase in the virulence of the virus as a result of repeated human passage. Host factors are possibly important since many of the victims had been subjected to the rigors of combat or to other abnormal living conditions.

Chronic Atrophy (Coarsely Nodular Cirrhosis):

In most reports of large series of cases of epidemic hepatitis, reference is made to the occurrence of protracted illness which terminates with the clinical picture of portal cirrhosis after a variable time. This type of the disease affects persons of all ages and of both sexes. The pathologic picture is quite characteristic: whole lobules of the liver may be destroyed and leave only the connective tissue framework, while other areas may be the site of coarse nodular regeneration. The structure of the liver is grossly disorganized and distorted, which produces the condition which Mallory designated as "toxic cirrhosis."[51] The bromsulfalein test for liver function discloses a marked retention of the dye. The cephalin cholesterol test and the thymol turbidity test are positive. The prothrombin time increases, and the values for cholesterol and cholesterol esters decrease progressively.

Recent reports from Scandinavian countries indicate that the incidence of this progressively destructive hepatitis is high among women who are past the menopause (Jersild, Alsted). The reason for this is obscure. I have observed several cases of coarsely nodular cirrhosis in which the patients were young males.

The disease appears to be progressive in spite of treatment and the outcome usually is unfavorable.

Chronic Hepatitis Associated with Jaundice ("Cholangiolitic Cirrhosis"):

The literature contains reports of cases in which a prolonged jaundice with remarkable preservation of the essential functions of the liver has followed in the wake of what was supposedly an ordinary form of infectious hepatitis. In these cases the disease resembled the hypertrophic biliary cirrhosis described by Hanot, a classification which has become a sort of catchall for all types of chronic unexplained jaundice. The profession is indebted to Watson, Hoffbauer and Howard for clarifying this subject and for their description of what they termed "cholangiolitic cirrhosis," a very gradually progressive form of hepatitis characterized by the phenomena usually associated with regurgitation jaundice (hyperbilirubinemia, hyperphosphatasemia, hypercholesterolemia) and well-preserved metabolic function. Liver biopsy revealed a progression from mild hepatitis to advanced portal cirrhosis: in Case 10 of their series, this process continued over a period of 33 years and death finally occurred as a result of hemorrhage from esophageal varices. Chester Jones has mentioned a similar experience. In each instance, a member of the patient's family had jaundice at about the same time as the patient did; the jaundice in the member of the family had disappeared while the patient's illness had become progressive and permanent. There are undoubtedly many similar cases not as yet recorded but the relation of the disease to infectious hepatitis rests as yet on purely circumstantial evidence.

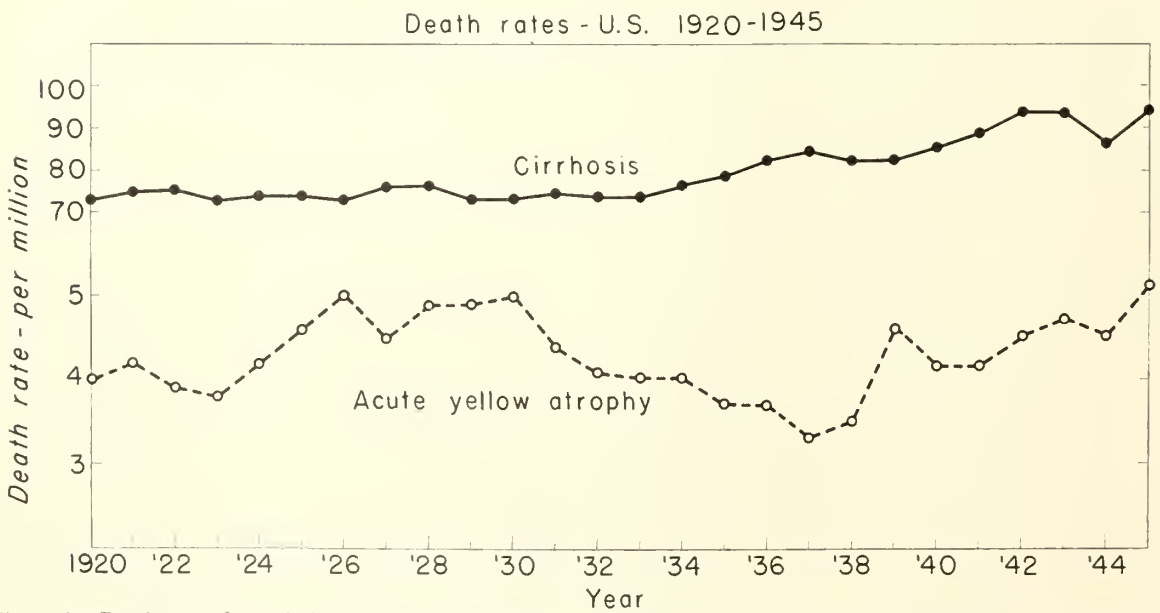


Figure 1.—Death rates from cirrhosis of the liver and from acute yellow atrophy in the United States, 1925 through 1945.

Minor Residua:

The minor residua of hepatitis are so designated here merely to distinguish them from the serious and progressive conditions previously mentioned. The existence of residual hepatomegaly and disturbances of hepatic function has been known for years (Polack, Rennie, Altschule and Gilligan) but not much clinical significance was attached to them (in spite of Bloomfield's suggestions as to their possible relation to a later cirrhosis) until Barker and his associates rediscovered the disease in the Mediterranean theater of war. It is a matter of common knowledge that there are many persons who bear the anatomic and physiologic scars of hepatitis (both IH and SH types) incurred during the recent war, and follow-up studies in such cases constitute a major medical problem for this generation of physicians and the next. Both active and inactive forms of chronic hepatitis undoubtedly exist. What their eventual outcome will be can only be surmised. I am inclined to share the views of Klatskin and Rappaport, who found clinical and laboratory evidence of residua in about half of a series of cases seen from a few months to 27 years after an acute episode of hepatitis but who did not feel that their findings were necessarily indicative of the development of progressive damage of the liver. A number of reviews of such cases will be made in the near future and until a large and statistically significant sample of late World War II hepatitis is studied the matter is best left undecided.

PREVENTION AND CONTROL

The excreta of patients with active infectious hepatitis should obviously be handled in the same manner as are those of typhoid patients, in spite of the fact that the length of time the feces contain the virus is not known. Considerable care should be exercised in regard to the handling of syringes and needles used in obtaining specimens of blood from, or in giving intravenous infusions to, such patients; they should be boiled or autoclaved before being used for other purposes. Particularly during epidemics, all possible precautions should be taken to avoid contamination of food, water and milk. Screening should be practiced to exclude transmission of the disease by insects.

Passive protection of persons exposed to the naturally occurring disease may be furnished by the administration of human gamma globulin (Gellis, Stokes and others, and Havens and Paul). The material is not available as yet for large scale general use, but it may be advisable to employ it in the protection of pregnant women or exposed persons in whom the disease might carry an unusual risk.

The protection of the community against serum hepatitis is a complex and difficult problem, particularly so since it is impossible to detect the virus of the disease in the blood of prospective donors by any means now available. Exclusion of persons, in whom hepatitis may be developing or who have just recovered from it, by some simple tests, such as the modified Harrison spot test for bilirubin or one of the flocculation tests, should be considered. Obviously, donors of blood should also be questioned carefully regarding any previous history of illness. Unfortunately, persons who have epidemic hepatitis without jaundice as well as persons who have to all intents and purposes never been ill may be carriers of the icterogenic agent (virus SH). Against this phenomenon, all precautions seem likely to be useless. Suggestions have been made as to the size of the pool of blood from which plasma is made. Very large pools would, of course, tend to dilute the icterogenic agent, but in view of the extremely small amounts required to transmit the disease, this approach does not appear entirely practical. Such large pools may all provide some protective antibodies against the disease. Small pools would, of course, tend to reduce the mathematical chances of transmission. Treatment of the plasma with ultraviolet light has been suggested by Oliphant and Hollaender, and this method seems to have promise. The plasma proteins may be altered somewhat by this treatment but there is no evidence of damage to antiviral and antibacterial substances. Passive prevention is still in the experimental stage. The importance of maintaining a diet high in protein and sources of vitamin B complex in ill or injured patients receiving transfusions of plasma is obvious. The use of gamma globulin as a possible preventive measure against virus SH infection is still under investigation. There are some recorded observations which seem to indicate that two 10 cc. doses administered about a month apart furnish a considerable degree of protection against homologous serum jaundice, but further confirmatory evidence is needed to establish the value of the procedure. In cases in which the disease develops after such treatment it does so only after a very long incubation period and the disease is said to have been mild.

For the present, and until such time as prospective carriers of the SH virus can be eliminated or the virus inactivated by some means, the most satisfactory plan will be to limit the use of blood, and particularly plasma, to cases in which the necessity outweighs the risk. When possible, plasma should be followed by two 10 cc. doses of gamma globulin at monthly intervals until a better means of prevention is available.

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Cyclodialysis, Multiple or Single, with Air Injection—An Operative Technique for Chronic Glaucoma*

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THE objective of the procedure to be described is to create a larger dialysis with less trauma than is possible with the ordinary technique of cyclodialysis and to control hemorrhage, thus promoting the formation of a cleft of sufficient size which is permanent. Multiple (or single) cyclodialysis combined with air injection according to the technique described in the following has been in my experience a safer and more effective operation than a single cyclodialysis according to the usual method.

The results reported are based on operations performed on 83 eyes. Primary glaucoma was present in 70 eyes; pressure was normalized in 63. Seven were unsuccessful. Analysis shows that in the eyes afflicted with primary glaucoma, 57 were of the wide angle type. Tension was normalized in 50 of these; in 41 without the use of miotics; in nine, miotics were required. Of 13 cases of the primary narrow angle type with peripheral adhesions ("chronic congestive glaucoma") all were normalized: 12 without the use of miotics and one required miotics.

Of 13 cases of secondary glaucoma, five were normalized without miotics and one with miotics; seven were unsuccessful. The latter comprised cases of venous thrombosis, siderosis, cyclitis and aphakia after unsuccessful trephination in which the surgical prognosis was extremely poor for any operation.

In judging results the condition was considered arrested if function was preserved and intraocular pressure remained less than 35 McLean at least one year after the operation. In most of the cases analyzed in this report, three to ten years has elapsed since operation. All were cases from private practice which lent themselves well to detailed analysis.

INDICATIONS FOR CYCLODIALYSIS

The effectiveness of cyclodialysis is contingent upon its application to the case in which it is indicated.

It is suggested that the ineffectiveness of present-day operations for chronic glaucoma may be due in some measure to improper choice of the kind of operation to suit the individual case. Improper selection would appear to be due to lack of knowledge of the local mechanical or pathologic anatomic cause of increased pressure in the individual case and to absence of classification of the lesion. These would permit a preoperative etiologic differentiation of cases from a surgical point of view and a more rational selection of operation on a causal basis.[1]

In previous communications a pathologic-anatomic classification was suggested[1,2] in which cases of primary glaucoma were divided into the narrow angle (or iris-block) and wide angle types. This has proved a useful guide to the selection of operation and has, in my experience, better assured the effectiveness of the respective operations.

According to this classification cyclodialysis was used in primary glaucoma in cases of the wide angle type and in those cases of the narrow angle type in which a large part of the angle was permanently closed by adhesions. Relative to the former it may be used as an alternative to the external filtering operations. Relative to the latter, it is suggested that cases presenting peripheral adhesions (late stage of the narrow angle type, commonly called "chronic congestive glaucoma") are particularly amenable to cyclodialysis, since there appears to be little tendency for readherance in the region in which the angle was previously closed by adhesions. For similar reasons it appears that repeated cyclodialysis in the area of a previous cyclodialysis in which the cleft has become closed by adhesions is often effective. A high degree of pressure has not contraindicated its use. Although it is assumed that an effort will be made preoperatively to convert a congestive phase into a noncongestive one, congestion does not preclude the operation.

The modified procedure of cyclodialysis described in this article appears to be effective under both congestive and noncongestive conditions. Indeed, in cases of the narrow angle type in which the angle is closed by adhesions and which are in a highly congestive stage, cyclodialysis combined with air injection would seem to be the operation of choice to the exclusion of other operations. In this variety and stage of glaucoma trephination, iridencleises and iridectomy are known to be generally ineffective and associated with considerable hazards. In a series of 13 such eyes operated on according to the technique described, cyclodialysis has been successful in all 13 for periods varying from one to ten years. In one case which had run a congestive course for several weeks with tension of 70 McLean, both eyes were successfully operated on and tension normalized until the death of the patient, 14 months later. Histological examination showed peripheral synechiae extending throughout the circumference of the angle of both eyes, except in the region of the operation. Here the adhesions

* Read before the Section on Eye, Ear, Nose and Throat at the Seventy-fifth Annual Session of the California Medical Association in Los Angeles, May 8, 1946.

had been separated and the angle opened; a cleft leading into the suprachoroidal space was present.*

Cyclodialysis may be indicated in cases in which other operations for glaucoma have failed. In some desperate cases in which the anterior chamber is almost or completely absent it may be used to advantage combined with iridectomy, according to Wheeler.[11]

In secondary glaucoma, ophthalmological experience has indicated that cyclodialysis is especially effective in cases of aphakia and luxation of the lens.

Cyclodialysis is relatively contraindicated, in my experience, in cases of primary narrow angle glaucoma unless adhesions have formed in the angle.[4] When cases of this type have run a noncongestive course, as they often do for many years, they have usually been diagnosed—with cases of the wide angle type—as "chronic simple glaucoma" and have consequently been operated on by cyclodialysis or by an external filtering operation. But in narrow angle glaucoma the crowded anatomic conditions in the angle and the relatively increased vitreous pressure, which tends to propel parts forward and to press the ciliary body against its base, encourages closure of the cleft made by the cyclodialysis. On the basis of clinical experience and postoperative gonioscopic studies, iridectomy[3] (in modified form) appears to give better results. It has been effective in the large majority of cases presenting the narrow angle type of glaucoma before adhesions have formed in the angle.

Summary. Cyclodialysis combined with air injection is indicated in primary glaucoma of the wide angle type. It appears to be the operation of choice in cases of narrow angle glaucoma with peripheral adhesions and in certain varieties of secondary glaucoma. It may be used to advantage on eyes in which other glaucoma operations have failed.

ACTION OF CYCLODIALYSIS

Gonioscopic studies[4,10] have shown that the successful action of cyclodialysis depends upon the formation of a permanent separation or cleft between the ciliary body and its attachment. This is confirmed by the histologic findings in a single case of Elschnig,[6] and in two eyes in the present series which were successfully dialysed and came to section one year after operation. The role of the cleft formation has been confirmed by Clarke,[5] Sugar,[9] inter al.

It is assumed that the aqueous passes through the cyclodialysis cleft into the suprachoroidal space where it is absorbed. The assumption is confirmed clinically by several cases in this series in which an acute rise in pressure followed a gonioscopically demonstrable sudden closure of the cleft, several years after the operation. Reopening of the cleft by miotics resulted in a sudden drop of pressure to the previous normal.

Gradual closure of the cleft, which has been the cause of the frequent lack of permanent results of cyclodialysis, is shown by gonioscopic studies[4] to be due to: insufficient extent of the original dialysis, operative trauma in the region of the cleft, which causes adhesions, or hemorrhage into the anterior chamber (at the time of operation or during the first week of convalescence), which promotes readherence of the ciliary body. Hemorrhage has been a common clinical experience and its influence on closure of the cleft is well known. A direct relationship may be remarked between hemorrhage into the anterior chamber and readherence of the iris root, not only by its incidence but by actual observation of the process of readherence in the individual case along the line of organizing blood clot.

AIR INJECTION IN CYCLODIALYSIS

In 1938 the writer injected air into the sealed anterior chamber with the intention of deepening it and widening the cleft by pushing the iris posteriorly. Immediately following injection, a slight hemorrhage into the chamber, such as commonly occurs in cyclodialysis, was seen to stop. After evacuation of the air from the chamber, no further bleeding occurred.

Furthermore, it was observed that the chamber angle had become image forming, evidently due to the different refractive index of air from aqueous. As a result, the cleft and its widening could be seen by direct observation without the use of a prismatic contact glass: the size or sufficiency of the cleft could in many cases be determined at the time of operation.

The observations made at that time indicated that air injection might become a valuable aid in stopping and in preventing hemorrhage during cyclodialysis, and that it might help in determining the sufficiency of the cleft immediately subsequent to operation, and finally in maintaining the patency of the cleft.

It was next observed in some cases that after several minutes and under certain conditions, there developed a progressive rise in intraocular pressure, evidently as the result of air blocking the free circulation of aqueous, thus producing a secondary glaucoma. The conditions under which this occurred are a sufficient quantity of air under pressure to produce seclusion of the pupil, in some cases combined with obstruction of the angle. In view of this danger, it became evident that only a limited quantity of air could be allowed to remain in the anterior chamber postoperatively to maintain the cleft opening. Further observations on this subject will be published in a succeeding paper.

Various developments and experiences with air injection in a series of over 83 eyes operated on by cyclodialysis since 1938 have confirmed these observations. Air injection has consistently proved effective in stopping and in preventing hemorrhage

* A report of the histological findings in this case will be published in the near future.

in all cases of cyclodialysis in which it has been promptly used.*

In the procedure of air injection for single and multiple cyclodialysis air, followed by physiological saline solution if desired, is injected into the sealed anterior chamber. Both the scleral incision for the injection of air and the corneal puncture for the injection of saline are made in an oblique direction in order that they may act as valve or trapdoor apertures which permit ingress but prevent egress of air or fluid except when this is desired. The anterior chamber is thus air and watertight as regards its contents.

The anterior chamber need not necessarily be completely filled with air. A bubble of air, which does not entirely fill the chamber and does not increase the pressure, will act as an adequate cushion to prevent excessive hemorrhage, keep the cleft free of blood, and perhaps help by its presence to keep the opposing surfaces apart in many cases. However, in cases in which hemorrhage threatens, it appears advisable to inject air under pressure, thus filling the entire chamber.

The amount of air pressure exerted on the inner walls of the anterior chamber can be controlled according to need. The air may be regarded as an adjustable internal tourniquet. After a few minutes of increased air pressure, when the danger of hemorrhage is past, a part of the air may be allowed to escape through an oblique puncture incision made in the cornea with a Graefe knife in order to obtain a valve closure. Or the air released may be replaced if desired by physiological saline solution under pressure. In the latter case the increased intraocular pressure returns to normal within five to ten minutes. Evidently the excess solution is carried off through the physiological channels of outflow and possibly also through the cyclodialysis cleft.

Air injected into the anterior chamber prevents primary hemorrhage during and immediately following operation, by raising intraocular pressure. The presence of air and saline solution in the anterior chamber also neutralizes the suction action of the cornea that otherwise encourages bleeding into the chamber. Later, when the excess air is removed, the substitution of physiological saline solution prevents secondary hemorrhage into the retina or vitreous, such as is caused occasionally by too sudden a reduction of pressure following cyclodialysis in elderly patients with sclerotic blood vessels. It does not, however, appear to discourage the late secondary hemorrhages into the anterior chamber which may occur during the first week following operation.

MULTIPLE CYCLODIALYSIS

Restoration of the anterior chamber by air injection immediately following a cyclodialysis makes it possible to perform a second cyclodialysis. By creating two moderate sized dialyses at the same sitting, it is possible to obtain more consistently an adequate separation of the iris root with less trauma than by a single large dialysis. It is also possible to avoid major blood vessels which are situated in the horizontal meridian.

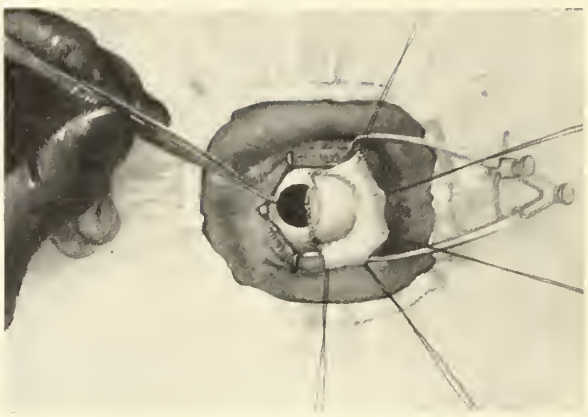


Fig. 1.—A curved conjunctival flap 10 mm. in length is formed extending from 6 to 12 o'clock. The posterior flap is retracted by means of six No. 5 "O" atraumatic single armed sutures of black silk which are attached under some tension to the face mask by means of hemostatic forceps.

Technique. Preoperatively, extreme miosis should be achieved. Anaesthesia may be local or general. The usual injections preliminary to local anaesthesia are carried out. A curved conjunctival flap 10 mm. in length is formed extending from 6 to 12 o'clock. (Fig. 1). After exposure of the sclera in both upper and lower quadrants a tightly wound applicator which has been dipped in adrenalin 1:1000 may be pressed against the areas of the sclera in which the incisions are to be made. Episcleral vessels may be obliterated by cauterization with the end of a strabismus hook which has been heated in an alcohol flame. The posterior conjunctival flap is retracted by means of six No. 5 "O" atraumatic single armed sutures of black silk which are attached under some tension to the face mask by means of hemostatic forceps. The operative area is thus exposed while the outer portions of the lids and the outer canthus are covered by the conjunctival flap whose raw surface is pointing upwards, thereby rendering the area and its surroundings aseptic. The bulbus is fixed at the insertion of the lateral rectus with a fine toothed forceps. The scleral incision is made with a sharp keratome in the lower outer quadrant, 8 mm. posterior to the corneoscleral border and oblique to the surface of the sclera. (Fig. 2).

After the initial incision it is sometimes more convenient to grasp the scleral wound lip itself. The incision is carried through the sclera by successive light strokes of the keratome and is slowly deepened until the lack of resistance indicates that the sclera has been perforated, due care being taken not to incise the underlying choroid. At this point, an iris spatula 3 mm. in width is introduced into the incision in order to test its patency and

* The hemostatic action of air injected during cyclodialysis has recently been noted by Randolph.7

to determine that it is of sufficient length to facilitate later air injection. (Fig. 3). The incision can be made longer. A second incision is now made in the upper outer quadrant in the same manner but care must be taken to make it more obliquely than in the lower quadrant because the sclera is often found to be thinner in the upper than it is in the lower quadrant. This is especially the case in primary wide angle glaucoma, in many cases of which a darkish hue is found in the upper quadrant due to the uvea shimmering through the sclera which may be of almost paperlike thinness, even though the pressure is not markedly elevated. It is likewise tested for its length, another 3 mm. wide spatula being used.

The bulbus is now firmly grasped at the contralateral limbus by an assistant with an Elschnig or Gifford forceps with lock. It continues to be fixed by the assistant throughout the performance of the cyclodialysis and other maneuvers involving air or saline injections. Before beginning the cyclodialysis the surgeon ascertains that four 5 cc. Luer syringes with No. 23 B-D. gold canulae attached and filled with air which has been sterilized by pulling it through a flame or through cotton wool are in readiness. I have found that one accomplishes air injection under pressure more easily and more consistently with a 5 cc. syringe than with a smaller syringe. A syringe is now held by the instrument nurse or by the assistant with his free hand, two inches from the surgeon's hand, in such a position that during the performance of cyclodialysis the direction of the canula corresponds to the meridian of the bulbus in which it is to be inserted, which is the same meridian in which the spatula was inserted. The surgeon now fixes the bulbus at the insertion of the external rectus tendon while he performs a cyclodialysis with a spatula 2 mm. wide which has been appropriately bent. One to 2 mm. of the blade of the spatula appears within the anterior chamber. The handle is rotated in such a manner that the tip of the spatula moves

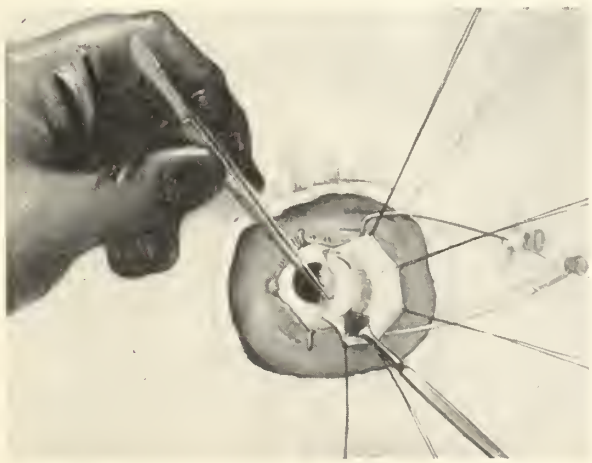


Fig. 2.—The scleral incision is made with a sharp keratome in the lower outer quadrant, 8 mm. posterior to the corneoscleral border and oblique to the surface of the sclera.

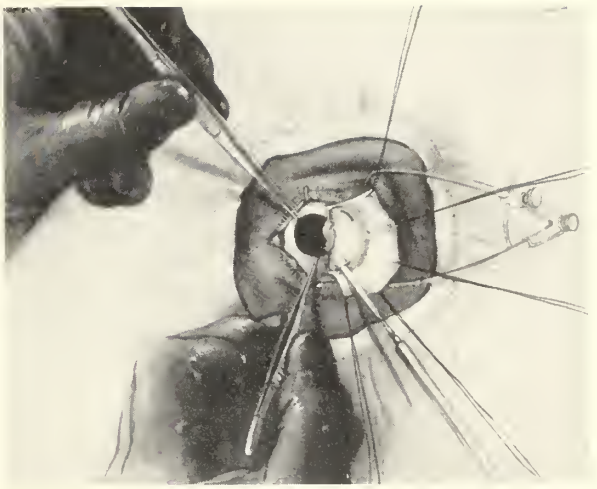


Fig. 3.—An iris spatula 3 mm. in width is introduced into the incision in order to test its patency and that it is of sufficient length to facilitate later air injection.

to the vertical and to just short of the horizontal meridian. It is well to undermine 3 mm. posterior to the corneoscleral border at either end of the sweep and to avoid crossing the horizontal meridian where major blood vessels are located. This maneuver should be followed without loss of a moment by the air injection which has been readied.

At the moment the surgeon removes the spatula, the syringe with gold canula which has been held in proper position is placed in his two hands without his having to look up. He inserts it into the incision from which he has just removed the spatula and immediately injects the air into the anterior chamber. (Fig. 4). This maneuver should take only a fraction of a second. The quantity of air to be injected in the individual case, and whether under pressure or not, is a matter of experience and judgment. The chamber is thus restored with air. After waiting a few minutes to allow hemostatic action to take place, a second cyclodialysis is undertaken in a similar manner.

The air which is lost during the performance of the second cyclodialysis is replaced with another injection of air which again restores the chamber and stops hemorrhage. Since, due to the presence of air, the angle has now become image forming, the region of the cyclodialysis may be inspected by the surgeon looking across the chamber from the opposite side. If the cleft is judged inadequate, the cyclodialysis may be enlarged with another spatula and the air injection repeated.

After a few minutes, when danger of hemorrhage is past, a part of the air may be allowed to escape through a corneal puncture which is obliquely placed with a Graefe knife 1 mm. axial to the corneoscleral border in order to obtain valve closure. If preferred, the air may be replaced by physiological saline solution* injected with a No.

* Because it is to be injected into the anterior chamber, solution from ampoules is used.

30 needle. This puncture is made sufficiently oblique to assure a valve or trapdoor closure. The point of the knife should barely perforate Descemet's membrane as observed under a binocular loupe. A small air bubble (4 to 5 mm. in diameter) is allowed to remain. When combined with appropriate positioning of the head, it will keep the cleft free from blood and help to keep the surfaces apart. (Fig. 5).

Successful insufflation of the anterior chamber with air is assured by continuing to inject air during removal of the canula. If the injection of air is stopped prior to removal of the cannla. air will escape during the removal.

The entire chamber may be filled with air, the pressure being adjusted by the amount injected or by secondarily evacuating small amounts as indicated. This process is controlled after closure of the conjunctival wound by the use of a tonometer, the base of which has been sterilized with alcohol and which is held in a sterile clamp, or by testing the dimpling of the cornea with a glass rod.

During the first few days of postoperative care, the patient's head should be kept rotated to the opposite side and raised so that the air bubble will take its position in the chamber angle at the location of the upper cleft. If the patient lies on his unoperated side and is as flat as is compatible with comfort. any slight hemorrhage will gravitate to the lower nasal side away from both clefts. If only a single cyclodialysis has been made in the upper outer quadrant, the patient may assume a semisitting position with the head rotated to the opposite side. How effective the presence of air is in widening the cleft and keeping it apart is as yet an open question which only further observations can decide. In some cases, the air bubble has appeared to maintain the separation during the first few days of healing.

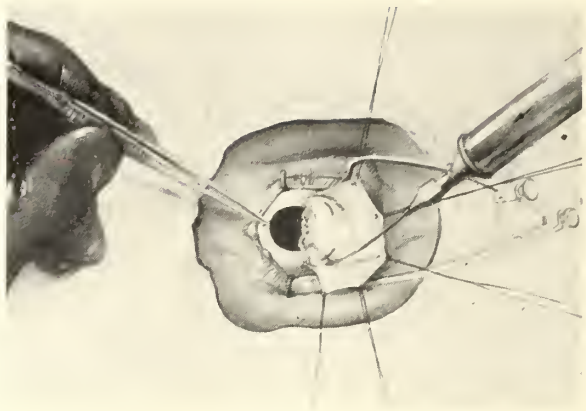


Fig. 4.—Following removal of the spatula the canulae is inserted into the incision and air injected into the anterior chamber. This maneuver should take only a fraction of a second.

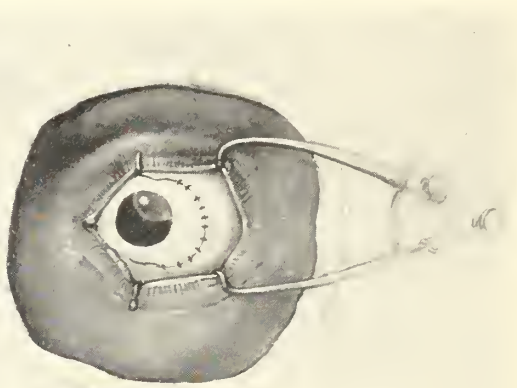


Fig. 5.—The air bubble is placed in the region of the cyclodialysis by appropriate positioning of the head.

POSTOPERATIVE PROPHYLAXIS

During convalescence, maximal miosis should be maintained in order to pull the root of the iris from its base and keep the cleft open. For this purpose, prostigmine 5 per cent is instilled and it may be necessary in some cases to use it as frequently as every three hours and to support its action by the use of 1 per cent eserine ointment. But since there is a marked tendency to formation of pigment adhesions in the pupillary area following cyclodialysis, one drop of adrenalin 1:100 should be instilled, combined with one drop of euphthalmine 2 per cent when deemed necessary, during the first several days of postoperative care to prevent the formation of pupillary adhesions of the pigment layer of the iris while the pupil is in miosis. When this is done the eye must be kept under strict observation and the dilatation of the pupil be only temporary. As soon as moderate dilatation of 3 or 4 mm. has been accomplished, the pupil should immediately be contracted again, lest mydriasis encourage closure of the cleft by approximating the root of the iris to its base. This is especially true if it has been necessary to operate with cyclodialysis on a case of the narrow angle type, or if in a case of the wide angle type, the angle is fortuitously narrow.

That the maintenance of miosis is an effective factor in keeping the cleft from closing was suggested by my experience in several cases of cyclodialysis mentioned above in which a rapid and sudden rise in pressure occurred several months or years after operation. In the case of an aphakic eye with a very extensive cleft. this occurred after eight years of normalized pressure without miotics. Since pressure dropped suddenly following contraction of the pupil with miotics and subsequent gonioscopic examination revealed an open cleft, the increased pressure in this case was evidently due to closure of the cleft. I have therefore come to the conclusion. which I have carried out in practice, that all eyes which have been successfully dialyzed. even though the cleft be gonioscopically wide and extensive. should continue to be given miotics

prophylactically once or twice a day—*not for the purpose of reducing pressure, but for keeping the cleft open.*

There are disadvantages associated with the operation. They are secondary hemorrhages occurring during convalescence (which have, however, interferred with the result in only one case), and the formation of pigment synechiae, which can be prevented in most cases as described in the text. There has been no case of iritis or sympathetic ophthalmia. The main disadvantage of the operation appears to be the formation of cataract or hastening of the development of incipient cataractous changes, especially in those cases in which pressure is reduced to a low normal or below the usual normal limits. Of 70 cases of primary glaucoma, 15 developed cataracts. Ten of these have been extracted, all with good results. Cataractous changes which were already present before operation in 16 other cases have increased. As Reese [8] states: "Eyes with primary glaucoma are more predisposed to the development of cataract than non-glaucomatous eyes. One-third or more of the eyes with primary glaucoma have incipient cataractous changes. Operations for glaucoma in general, and especially the trephine operation, tend to hasten the development of these incipient cataractous changes." This applies also to cyclodialysis but does not interfere with the indication for cyclodialysis in primary narrow angle glaucoma with peripheral adhesions, in aphakia or subluxation of the lens. In all of these it possesses marked advantages over other operations for glaucoma.

SUMMARY AND CONCLUSIONS

1. The procedure for cyclodialysis—multiple or single—combined with air injection is described.

2. Air injection controls hemorrhage, widens the cyclodialysis cleft, makes the cleft visible, and by restoring and deepening the anterior chamber, makes possible a multiple cyclodialysis.

3. Multiple cyclodialysis with air injection is safer and more effective than a large single cyclodialysis according to the usual method, because it is possible to make a permanent dialysis more consistently with less trauma and without hemorrhage, and to promote the formation of a permanent cleft of sufficient size by visual control.

4. Under certain conditions continuance of air pressure in the anterior chamber produces obstruction, retention and thus artificial glaucoma.

5. Cyclodialysis combined with air injection is indicated in primary glaucoma of the wide angle type. It is especially indicated, to the exclusion of trephination, iridencleisis and iridectomy in the late stage of the narrow angle type after peripheral adhesions have closed the angle in large part, irrespective of whether there is congestion or not. It is indicated in those varieties of secondary glaucoma in which cyclodialysis is commonly accepted as being indicated.

6. The operative procedure consists of the following steps:

(a) Pre-operatively, extreme miosis should be achieved.

(b) Following the cyclodialysis, air is injected.

(c) The second cyclodialysis is made through a scleral incision in the adjoining quadrant.

(d) Following the second cyclodialysis, air is again injected. The cleft is examined by visual control and if deemed necessary it can be enlarged and the air injection repeated.

(e) Hemorrhage having been prevented, air is replaced after a few minutes by physiological saline solution if it is desired.

(f) A small air bubble is left remaining in the chamber to promote separation of the cleft and keep it free from blood.

(g) Prostigmine 5 per cent is instilled postoperatively to maintain maximal miosis. Postoperative maintenance of miosis is an effective factor in keeping the cleft and the channel of outlet from closing.

(h) Adrenalin 1-100 and euphthalmine 2 per cent should be instilled at intervals of a few days to prevent formation of pupillary adhesions but the mydriasis must be transient only and be adequately counteracted by miotics.

7. A miotic should be used once or twice daily permanently as a prophylactic to assure maintenance of the cleft and channel.

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The Treatment of Acute Hematogenous Osteomyelitis with Penicillin and Sulfonamides Combined*

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THE prognosis in acute hematogenous osteomyelitis is changing for the better in respect to mortality rate, complications, and the degree of disability produced by the bone lesions. The addition of chemotherapy and penicillin to the treatment of the disease is mainly responsible for this marked improvement in its outcome. Since it is oftentimes difficult to appreciate the beneficial effects which new treatments obtain unless careful comparisons are made with the course of patients treated by previous methods, an analysis was made of the records of all cases of acute osteomyelitis due to the staphylococcus which were admitted to the Los Angeles Children's Hospital in the years from 1941 to 1946. The cases were divided into two groups, according to the type of treatment they received.

From 1941 to 1944 there were 16 admissions for acute osteomyelitis. During the acute stage of the disease this group of patients received the derivations of sulfanilamide in one form or another, usually sulfadiazine. During 1944 and 1945 there were nine admissions. These were treated with a combination of penicillin and one of the sulfonamides, and for clarity this group will be referred to throughout this article as the penicillin treated group.

Osteomyelitis is a relatively uncommon disease and this is an insufficient number of cases to establish a statistically valid series but an analysis of these case records nevertheless brings to light certain trends which indicate a more satisfactory prognosis for this disease under its present management.

The mortality in our series of cases was zero. This trend agrees with the conclusions of Kenney[6] who made an extensive study of the mortality rate of osteomyelitis before and since the introduction of chemotherapy. He arrived at the mortality rates from a comparative study of 3,000 cases of acute osteomyelitis which had been reported in the medical literature.

He found that the change from immediate surgical drainage to one of delayed surgical intervention in the acute cases, as adopted about 1934, resulted in a fall in the mortality rate from around 40 per cent to a new low of 23 per cent. Chemotherapy was then introduced and its use succeeded in lowering this figure still further to about 3 per cent. More recently the addition of antibiotics to chemotherapy has reduced the mortality rate to a still lower figure, for penicillin is much more effective than sulfadiazine in sterilizing the staphylococcus infected blood stream. Altemeirer and Helmsworth[1] reported a series of 34 cases which they treated with penicillin without mortality and several other authors have reported a smaller series with essentially the same mortality figures. With the extensive use of penicillin early in the treatment of these staphylococcus infections we feel that we can anticipate a reduction of the mortality rate to less than 1 per cent.

The addition of penicillin did not appreciably reduce the number of days of hospitalization of our series. The average number of days of hospitalization of the group treated with the sulfonamides was 51, while the average for the cases treated with a combination was 47 days. (Figure 1.)

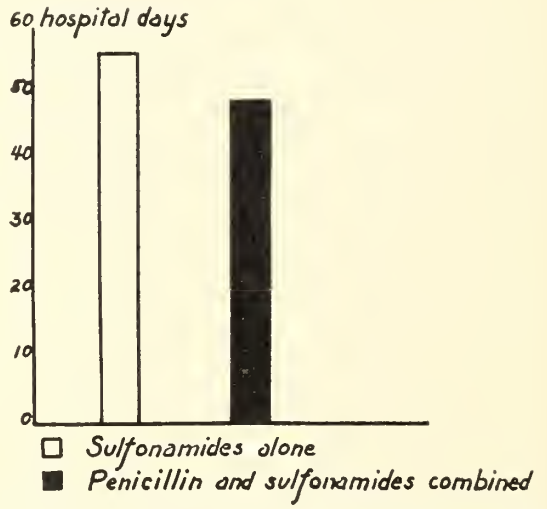


Figure 1.—Diagramatic representation of the average number of hospital days in 25 cases of staphylococcus osteomyelitis.

To compare the course of the disease as reflected by the elevations in temperature we made a composite chart of the average daily high and low temperature of these patients during their first two weeks of hospitalization. It reveals a considerable difference in the course of the disease in the patient treated with penicillin as compared with that in the patient treated with sulfadiazine. Both groups started out with approximately the same temperature level but while the fever of the group treated with the sulfonamides alone continued to fluctuate daily for the first week to about 101 degrees, that of the penicillin-treated group usually fell to a 99 degree level at the end of the third day. This striking difference between penicillin-sulfa therapy and sulfonamide

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treatment in influencing the duration of clinical signs of infection is best visualized on the accompanying diagram. It must be remembered that this composite temperature chart does not reflect the considerably greater individual variations in their response to the disease process. (Figure 2.)

Anderson *et al.*,[3] Altemeirer and Helmsworth [1] and others in studying cases reached this same conclusion regarding an effective shortening which penicillin produces in the number of days of elevated temperature.

Studies have been made of the effect of penicillin on the bone lesions as visualized by repeating x-ray films of the affected part. Altemeirer and Reinecke [2] found that a few of their cases with clinical signs of osteomyelitis and positive blood cultures did not show any bony changes. They believed they were justified in dividing their patients into two groups. In one group they felt penicillin therapy had been started early enough in the course of the disease to sterilize the blood stream before bone abscess and destruction took place, while in the other group the treatment had been delayed several days and it was their belief that this delay resulted in secondary changes observable in the roentgenograms of the bone involved. They suggest that the degree of bone destruction as visualized on the x-ray film depends upon how long the treatment has been postponed.

In our series we did not find this to be true. All of our cases eventually showed bone changes which were discernible by x-ray, even one case in which we believe penicillin was started on the first day of appearance of clinical signs of the infection. In the absence of bone changes which can be visualized on x-ray film it is difficult to judge whether the patient has osteomyelitis or merely a staphylococcic septicemia. In our cases bone changes are a requisite for the diagnosis of osteomyelitis. In the cases exhibiting more severe bone changes, rarefaction and absorption of the calcium salts continued for the first two to three months after the acute infection. This change was unaccompanied by any systemic evidence of infection, however, suggesting that it was not the result of a chronic bone infection but rather the continued absorption of bone damaged during the acute stage of the infection. After this variable period of time the x-rays reveal areas of decreased density and bone replacement, suggesting a healing of the bone.

It is difficult to compare the x-ray changes in cases treated by the penicillin-sulfa combination with those in cases treated with sulfadiazine. It can only be stated that on comparing them one gains the definite impression that the combination prevents severe bone lesions.

With this accumulating evidence indicating that penicillin has lessened the degree of bone damage and abscess formation, the question of the optimum time and necessity for surgical drainage is again raised. From a review of the literature on the problem one concludes that non-surgical intervention in the treatment of the bone lesion is becoming more desirable when the patient is under penicillin therapy. In the review of our series one of the most striking features is the sharp drop in the incidence of surgical intervention in the penicillin-treated group. In the group treated with the sulfonamides, 90 per cent had surgical intervention, with incision and drainage, or else decortication in one form or another and packing with vaseline gauze. In contrast, only 20 per cent of the penicillin-treated group had surgical drainage, and then only aspiration of the soft tissue accumula-

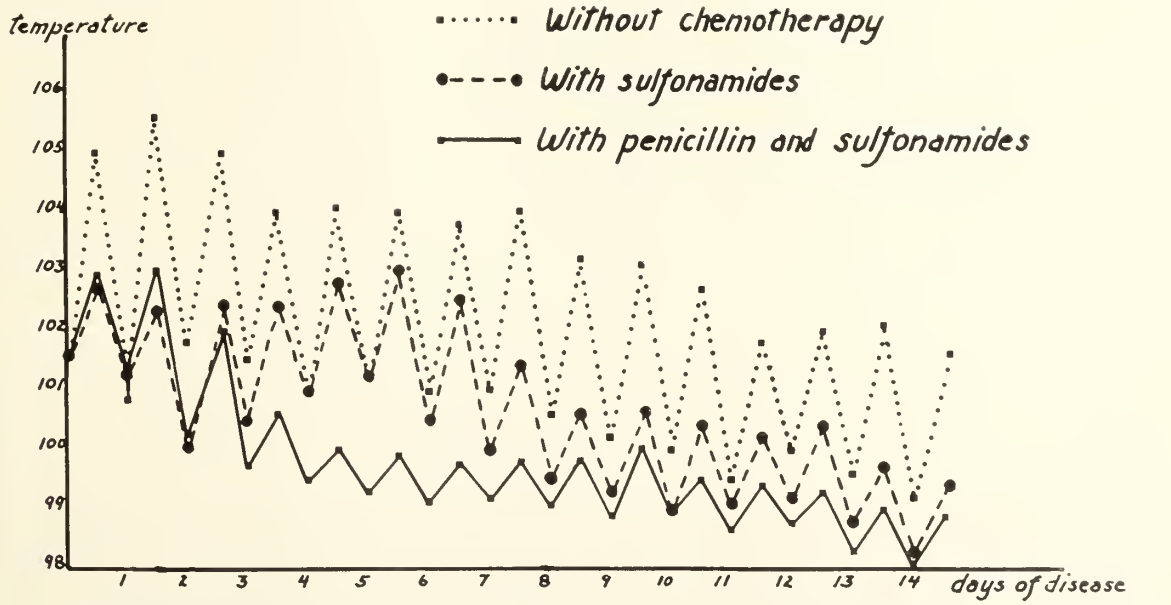


Figure 2.—Composite chart of the average daily high and low temperatures of osteomyelitis cases under different forms of therapy.

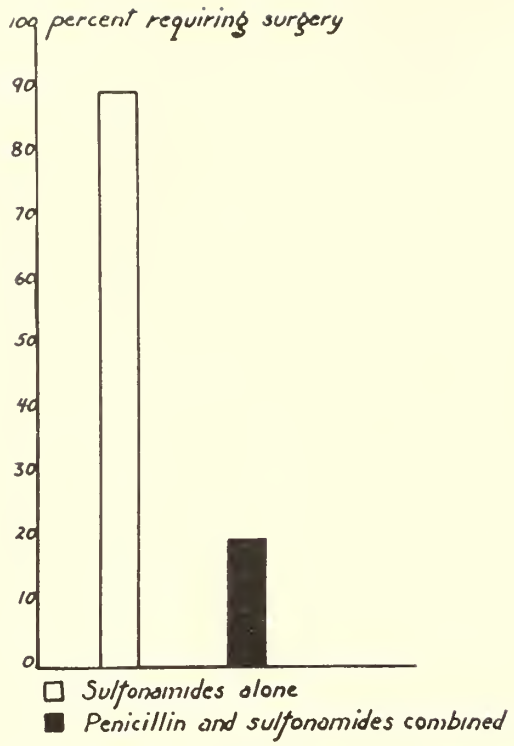


Figure 3.—Chart comparing the percentage of cases which had surgical drainage before and since the addition of penicillin to sulfonamide treatment of osteomyelitis.

tions of purulent material. A small incision for drainage of a soft tissue abscess was carried out in two cases. (Figure 3.)

A Stanford University group under Bloomfield[4] believes that adequate early arrest of the disease with penicillin will do away with surgery entirely.

Dickson[5] is perhaps the strongest supporter of early surgical drainage. He feels that one should produce an avenue of escape for entrapped purulent material in all bone abscesses where there is no evidence of continuing systemic infection and where there is definite evidence by x-ray of bone localization. Our series certainly indicates that with penicillin therapy few need surgery and we hesitate to institute any procedures which might introduce secondary infection until such become absolutely necessary. It has been our experience in treating these cases and deciding upon surgical intervention that several other important factors must be borne in mind.

The first of these in importance is the type of infection from which the patient suffers. Is it a septicemia with the bony lesion playing only a small part in the generalized process, or is it a localizing bone abscess following a transient bacteremia? In a certain number of the cases the infection is a generalized one with multiplication of the organism in the blood stream and secondary abscess formation in the bony, hepatic, pulmonary or other systems. Is it not unwise to operate and drain in such cases?

A greater number of cases of osteomyelitis have a transient bacteremia, with the development of a bone abscess during the first few days of the infection. Drainage of such an abscess, after the body has been able to control the initial stages of infection, may prevent its further subcortical spread and involvement of the shaft and thereby shorten the period of disability and destruction of the disease. X-ray changes showing increased density do not necessarily mean purulent accumulation. Soft tissue fluctuation is a better indication for drainage. The procedure might be incision of the soft tissues and decortication over the most destroyed area, suturing into the wound a catheter to maintain drainage and facilitate the instillation of penicillin locally each day, with closure of the incision by stainless steel retention sutures to prevent secondary infection.

Many fluctuant subcutaneous abscesses can be drained easily by aspiration, for with penicillin therapy the pus tends to be thin, rather than thick and filled with necrotic debris as is generally characteristic of staphylococcal infections. Should this procedure not suffice, further surgical measures can then be instituted.

Any comparison between the recurrences of infection and subsequent metastatic complications in these two groups must be postponed until there has been a considerable passage of time.

TREATMENT

If we expect to reduce the mortality rate in acute hematogenous osteomyelitis to less than 1 per cent and to keep the bone destruction at an absolute minimum adequate early treatment of the disease is essential. The following outline covers the major features of such treatment.

1. Complete examination with x-rays of the affected parts, plus a chest film.
2. A hemoglobin, red blood count, white blood count, and differential count on admission with the hemoglobin, white blood count and differential repeated every other day for the first week or for the duration of the acute stage, then once weekly.
3. Urine examination on admission and every other day during the acute stage, then bi-weekly.
4. Blood culture on admission and every other day until three cultures are negative.
5. Donors secured and blood matched. 150 to 200 cc. daily if indicated: at least once a week, depending on the hemoglobin level.
6. Penicillin, intravenous route if necessary, 400,000 units or more daily for the first day or two, then somewhat smaller dosage until the patient is well.
7. Sulfadiazine in adequate amounts to maintain a blood level of about 12 mgm. per 100 cc. of blood. A high dosage may be necessary to secure this blood level.
8. Positive fluid balance with adequate output of urine by use of intravenous fluids if necessary.
9. Immobilization of affected parts with splints, plaster, or traction, taking care to avoid injuring the skin with adhesive.
10. High vitamin diet with accessory vitamins by mouth or intravenously.

SUMMARY

A comparative study of the effectiveness of the sulfonamides alone and of the sulfonamides and penicillin combined in the treatment of 25 cases of hematogenous staphylococcus aureus osteomyelitis at the Children's Hospital, Los Angeles, is presented. It shows the expected mortality rate of penicillin treated cases of osteomyelitis should be less than 1 per cent; that the course of the disease as reflected by the temperature charts is considerably shortened; that the roentgenograms reveal less destruction in these cases and that the necessity for surgical intervention and drainage of bone abscesses has been markedly reduced.

An outline of the essentials for the adequate treatment of acute osteomyelitis is presented.

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Quinidine in Heart Disease, Particularly in the Older Age Groups*

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THE value of quinidine in the treatment of the acute cardiac arrhythmias seems to be well accepted. However, reports frequently appear in the literature emphasizing that it should be used only in the acute arrhythmias in young persons with no underlying heart disease and warning against its use in (1) patients in the older age group, (2) auricular fibrillation of more than three months' duration, (3) coronary sclerosis with fibrillation, (4) heart failure with fibrillation and (5) coronary thrombosis. Quinidine thus would be contraindicated in groups representing perhaps the majority of all cardiac arrhythmias.

The average age of the population in the United States is increasing. The latest statistical report shows that more than one half of our population is over 30 years of age.[16] On the Pacific coast the average age is higher than in any other section of this country.[15] The median age of residents is higher in California than in any other state. At 33 years it is more than three years higher than the median age for the nation as a whole. The life expectancy at birth among the policy holders of the Metropolitan Life Insurance Co. in 1945 is 65 years, 14 years higher than it was just 25 years ago. In the United States today, cardiac disease is the chief cause of death. A number of studies are being conducted on the causes and the prevention of various cardiac diseases. It is hoped that rapid progress in this field will be made. However, for the present we must be prepared to treat a constantly aging population affected with increasing numbers of cardiac disorders. That the medical profession is cognizant of this fact is evidenced by the recent appearance of a medical periodical restricted to geriatrics.

In our experience of many years we have found the greatest value of quinidine to be in the older age group. In our first clinical report,[22] 80 per cent of our successfully treated cases of auricular fibrillation were in patients 50 years of age or older. Since 1929 we have treated more than 500 cases of auricular fibrillation with a successful restoration to normal rhythm in about 70 per cent of cases. Of this percentage by far the greater part comprises cases in the older age group. Many of these patients were cardiac invalids materially benefited by the restoration to normal cardiac rhythm. Two of them had been successfully carrying on in their daily duties for ten years when last seen in 1942.

In most instances effort should be made to restore an irregular beating heart to normal rhythm. The cardiac output of a fibrillating heart is 15 to 79 per cent less than it is when the heart has been restored to normal rhythm.[3,11] Clinical and experimental studies show that the average difference is 20 to 30 per cent.[7,14] This is a considerable variation in cardiac efficiency. An irregular heart causes a slowing of the circulation and an increase in venous pressure. This leads to an overfilling of the heart. Thus a vicious circle is established.[6]

CASE REPORTS

Case 1: A farmer, aged 72 years, had been reporting to the clinic for more than two months. His chief complaint was marked dyspnea, weakness, and swelling of the ankles and legs. He had been digitalized. The heart rate was 70 but the beat was irregular. Congestion rales were present in the bases

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of both lungs. The liver was palpable below the costal margin and there was pitting edema in both the legs and the feet. The patient said his heart had been "thumping irregularly" for about four years. Although he said he thought there had been some improvement since he began receiving treatment at the clinic, he could not carry on with limited activities. He had been given the usual treatment with digitalis but his heart was still in decompensation. A maintenance dose of digitalis was continued and quinidine was started. In a period of one week, after the daily dose of quinidine had reached 1.17 gm., his heart beat was restored to normal rhythm. The edema, dyspnea and signs of cardiac failure had disappeared. The patient was glad to boast that he had not felt so well in four years. His pulse continued regular and he carried on with his duties on his farm for at least the three ensuing years for which we have record of him.

This man, a cardiac invalid for many months, was restored to a useful existence, with the aid of quinidine, for a known period of three years. Digitalis alone was not sufficient. The restoration to normal rhythm increased the efficiency of the heart to spell the difference between a heart in failure to one in compensation. Cases of this type are not unusual. We had several. Askey [1] reported two striking examples of this kind. He heartily confirms our experiences in saying, "In certain instances its use has been life saving and has prolonged life for many months in a number of desperately sick patients."

There is another reason why an irregular heart should be restored to normal rhythm. The psychological effect of a fibrillation on a patient is often severe enough to prevent his carrying on with his daily duties. He is constantly aware of palpitation and abnormal cardiac rhythm. Even though the degree of cardiac decompensation be very little, such a patient often considers himself a potential cardiac invalid. In such cases particularly, most spectacular results may be obtained by quinidine therapy. Restoration to normal rhythm not only improves his physical well-being but usually improves his psychological outlook to the future. Many such cases have been successfully treated.

Case 2: An automobile executive, aged 49 years had been treated with digitalis for fibrillation for several months. He had been unsuccessfully assured that since the fibrillation was slow there was no decrease in the cardiac efficiency. He was constantly aware of "palpitation" and was especially annoyed by it when he would read in the daily newspapers of the death from heart disease of a prominent citizen or an acquaintance. He confessed beginning failure to carry on his work efficiently and admitted concern with the distribution of his estate in case of his sudden death. He was a cardiac invalid. In less than one week with quinidine his heart was restored to normal rhythm after it had been fibrillating for six months. The change in him was remarkable. He was able to work; to do his job efficiently; to view life and the future without fear. The rhythm has remained regular now for one year. He is on daily maintenance doses of quinidine and digitalis. The underlying disease in this patient's heart is mild coronary sclerosis. He was told about it. Nevertheless, now that his heart is beating regularly, he is not continually heart conscious and fearful.

What other reasons are there for the limited use of quinidine in heart disease? They are the toxic symptoms and dangers so often attributed to its use.

The most commonly mentioned are nausea, vomiting, diarrhea, vertigo, tinnitus, blurring of vision, emboli, cardiac standstill, and respiratory paralysis.

Emboli:

Our experience in the treatment of several hundred cases of auricular fibrillation and the experience of several other investigators [2,4,8,10,18] lead us to believe that the incidence of this complication has been definitely overemphasized. Emboli occur in cases of auricular fibrillation under treatment with digitalis and in those receiving no treatment whatsoever. Accidents occurring in these circumstances appear to be well taken by the treating physician and are considered "legal" if I may use the colloquial. However, as Korns [8] stated should an accident occur while the patient is taking quinidine, it becomes front page news.

Cardiac Standstill:

We had two cases of asystole complicating the use of quinidine. They were not fatal. Quinidine not only increases the refractory period; it also depresses the sino-auricular node. It is a cardiac depressant. Cardiac standstill complication may occur. We must remember that the use of digitalis is not without danger.[24] Excessive doses of digitalis too rapidly and over too long a period may cause auricular standstill, ventricular fibrillation, and sudden death.

Respiratory Paralysis:

Sudden deaths from the use of quinidine have been attributed to paralysis of respiration. Experiments on cats have shown that after lethal doses of quinidine have been given, respiration ceases one minute or more before the heart stops beating.[5] We corroborated this finding in dogs. However, it always required lethal doses of quinidine to obtain this result. It is quite possible, perhaps, for smaller doses to have the same effect.

Toxic Symptoms:

How may we avoid many of the so called toxic symptoms and dangers attributed to the use of quinidine?

Since 1932 I have repeatedly emphasized that most of the unpleasant complications were not due to the action of the drug per se, but rather to the method by which the drug was given.[20,22]

Quinidine is a potent drug. As with any potent drug used in the treatment of disease a better understanding of its pharmacological action, its behavior, and its effects not only lessen the dangers of its use but frequently enhance its therapeutic values.

It is well known pharmacologically that to avoid complications and toxic effects of any potent drug, a tolerance for the drug must first be established. To accomplish this, very small doses should be given at first and slowly and gradually increased.

In dogs, when the equivalent of a large dose of quinidine is given in divided doses, the concentration of the drug in the heart muscle is much less and remains over a longer period of time.[21] Experimental

and clinical studies lead us to believe our small dose method is not only more safe but more effective.

Patients treated by the small dose method [20a] rarely complain of the toxic symptoms so often blamed on the use of this drug. Digitalis must not be discontinued while giving quinidine. Some of the bad effects attributed to the action of quinidine are in some cases due to the lack of digitalis. Each works better when given with the other.[23]

Should quinidine be used in acute coronary occlusion, in acute heart failure with or without fibrillation?

There is considerable controversy about this problem. Morawitz and Hochrein [12] believed that their results were better in a group of acute cardiac conditions when 0.1 gm. quinidine was administered twice daily than they were in a control group not receiving quinidine. Our experiences lead us to corroborate these findings. We believe the dangers of ventricular fibrillation and sudden death are lessened by the prophylactic use of quinidine during the acute stage of heart failure.

Levine,[9] experimenting on cats, concluded that quinidine should be given to prevent sudden death, "in those conditions in which ventricular fibrillation is prone to occur."

Tying off the circumflex branch of the left coronary artery in dogs, Smith, McEachern, and Hall [13] found that the number of recoveries is much larger in the animals treated with quinidine than in the untreated animals. The mortality was 55 per cent as against 75 per cent.

Thomas and Harrison,[17] producing cardiac damage in rats by searing the surface of the heart, concluded that quinidine given subsequent to the production of myocardial injury caused a slight decrease in mortality.

Wegria and Nickerson,[19] in studying the susceptibility of the hearts of dogs to ventricular fibrillation induced by electrical shocks, found that quinidine reduced the susceptibility to ventricular fibrillation, but *only provided the dose of quinidine was not too large*, and provided it was *administered slowly*. When large doses were given rapidly, the susceptibility to fibrillation increased and spontaneous ventricular fibrillation frequently occurred.

SUMMARY

Quinidine is a valuable drug in the treatment of heart disease. The toxic symptoms and dangers so frequently attributed to its use have been overemphasized. It is our belief that many of these unpleasant complications are perhaps due to the method usually advocated for giving quinidine rather than to the drug per se.

By using the small dose method [20a] a better tolerance for the drug is established in the patient and the toxic symptoms and dangers so often attributed to it are frequently avoided.

Digitalis must not be discontinued during quinidine therapy.

The use of quinidine has been limited in the older age group of cardiac patients and in patients with chronic cardiac arrhythmias. It is these groups which are often in most need of this drug and in which frequently most favorable results are obtained.

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The Pharmacology of New Drugs Useful in Pediatric Practice*

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ALLERGIES of childhood are common, but not always responsive to treatment directed against the supposed etiology. Agents designed to reverse the pathological physiology, such as epinephrine, ephedrine, xanthines, atropine, and similar agents often afford temporary relief but do nothing about the mechanism initiating the physiological lesion. Histamine has long been suspected as the effective end product of a series of chemical reactions beginning with the antigen-antibody reaction of true allergy, or the tissue injury in "physical allergies," which are thought to release histamine from histidine or from preformed combined histamine of the cells. Failing to prevent the formation of histamine, theoretically, the next most desirable therapeutic or prophylactic measure would be one which would prevent the reaction of histamine with the cell, as atropine prevents the reaction of the cell with acetylcholine. Many compounds are now known which have this effect. Several reviews of these drugs have been published, the most recent coming to my attention being the critical review of Hartmen[11] in California Medicine. Therefore, only the relation of the pharmacological data to clinical experience will be pointed out.

BENADRYL AND PYRIBENZAMINE

Chemically, the antihistaminic drugs are of two classes. One class, illustrated by the original antihistaminic compound 929 F of Fourneau[2] of the Pasteur Institute and by Benadryl (beta-dimethylamino benzhydril ether HCl) are aromatic ethers of dialkyl ethyl amines; the second class incorporates the large number of antihistaminic substances used clinically and are aromatic derivatives of dialkyl ethylenediamines. Pyribenzamine is of the second class, as are also Antergan and Neoantergan of the French products.[3]

The antihistaminic properties of this class of drugs was discovered in the course of routine testing for spasmolytic properties. The isolated intestine is a classical test object for the study of spasmolytic drugs; the isolated ileum of the guinea pig is most sensitive to histamine[1] and affords a simple biological method for preliminary surveys of the presence of histamine in tissues and body fluids,[4] as well as of drugs which counteract the effects of histamine. Histamine in a concentration as low as 1:10,000,000 in the saline solution (usually Tyrode's solution) in which the strip of ileum is immersed causes strong contraction of the muscle coats. Such a contraction is antagonized by both Benadryl and Pyribenzamine in concentrations of 1:10,000,000 to 1:50,000,000.[16] Higher concentrations of Benadryl or Pyribenzamine antagonize acetylcholine and barium ion effects, hence the blocking of histamine action is only relatively specific.

A more dramatic demonstration of the antihistaminic effects of drugs of this type is the prevention of asthma in guinea pigs exposed to an atmosphere into which a solution of histamine has been nebulized. One part of histamine in 10 billion parts of air (0.1 microgram per liter) will cause a severe asthmatic attack in the guinea pig; the injection of 0.1 milligram of Pyribenzamine[17] or 10 milligrams of Benadryl[14] per kilogram body weight protects the guinea pig for two hours or more. These drugs also protect guinea pigs and dogs against bronchospasm produced by injections of histamine, or by anaphylaxis produced by protein to which the animal has been sensitized. In these instances also, Pyribenzamine is from 10 to 500 times more potent than Benadryl.

OTHER ANTAGONISMS

Benadryl and Pyribenzamine have been found to antagonize almost every effect of histamine; these include the hypotensive action of histamine,[15,21,24] the production of skin wheals,[9,13] contraction of the nictitating membrane,[25] the increase in salivary flow,[25] and the contraction of the uterus of the guinea pig.[3] The rat uterus is inhibited by histamine. This effect also was antagonized by Pyribenzamine in our laboratory but since Pyribenzamine alone causes contraction in doses which antagonize histamine, this may not represent the true antihistaminic action.

MECHANISM OF ANTIHISTAMINIC ACTION

The antihistaminic action seems to be based upon a competition between the drug and histamine for attachment to some cellular constituent, probably an enzyme, which is activiated by unopposed histamine.[24] A well known antagonism of this type is that between sulfanilamide and para-aminobenzoic acid. In support of this interpretation is the experimental demonstration that these drugs do not inactivate or destroy histamine chemically, they do not augment the action of the histamine destroying enzyme called histaminase, and they do not interfere with antigen-antibody reactions related to anaphylaxis and clinical allergy.

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CLINICAL APPLICATION

Clinical experience with Benadryl and Pyribenzamine is surprisingly at variance with laboratory experience. The anticipated value in treatment of asthma did not materialize, for not more than one-fourth of the cases of asthma are relieved by use of these drugs. On the other hand, in the laboratory there is only partial protection against histamine-produced urticaria, while clinically these drugs exhibit their most powerful effects against acute urticaria and angioneurotic edema, especially against penicillin urticaria. Another discrepancy between the laboratory and the clinic is that in patients, Pyribenzamine is apparently no more potent than Benadryl, whereas the former is many times more active than the latter in opposing experimental histamine asthma. Both drugs tend to depress the central nervous system in patients, but toxic doses in animals produce convulsions, followed by coma. In patients, depression of the leukocyte count has been reported but this has not occurred in laboratory animals.

PHARMACOLOGY OF PRIVINE

Whereas abundant laboratory experiments preceded the introduction of antihistaminic drugs for clinical use, Privine Hydrochloride was scarcely known to pharmacologists before it had had extensive clinical trial. Chemically, Privine is 2-naphthyl-(1′)-methyl-imidazoline hydrochloride. During the last three years, however, Ciba Pharmaceutical Products, Incorporated, has supported research on this product, first at Wayne University College of Medicine,[5,6] and subsequently in the company laboratories,[26] with the discovery of many interesting pharmacological properties of the drug. Privine seems to combine sympathicotropic (adrenergic), parasympathicotropic (cholinergic), and musculotropic actions. It elevates blood pressure; the effect is diminished, but not abolished nor reversed, by yohimbine, ergotamine, or 933 F. Cocaine does not potentiate the action of Privine. By contrast, the true sympathicotropic agent, epinephrine, is potentiated by cocaine, and its pressor effect is reversed to depressor by ergotamine, yohimbine, or 933 F. Privine differs from amphetamine and ephedrine in that it exhibits little tachyphylaxis; that is, repeated intravenous doses continue to produce their pressor effects. Other sympathomimetic effects of Privine are vasoconstriction of nasal mucosa, mydriasis, and inhibition of intestinal motility. Here, however, the sympathomimetic effects end. Perfused bronchioles are not relaxed; the uterus of the guinea pig is contracted rather than relaxed, and coronary flow is decreased rather than increased. A cholinergic effect in the salivary glands is demonstrated by the fact that Privine stimulation is opposed by atropine, and Privine seems to have both an adrenergic and a cholinergic effect on the nictitating membrane of the cat, for either yohimbine or atropine decreases the contraction caused by Privine.

Animal experiments on the toxicity of Privine indicated a high therapeutic index in that a few micrograms of the drug caused a definite elevation of blood pressure, whereas the fatal dose was well over 1 milligram per kilogram of body weight.[5] However, animal experiments failed to explain the occasional depression following administration of Privine intranasally to children. Much experimental work is required to explore the field of action of this interesting drug and of its therapeutic possibilities and dangers.

BAL

British investigators found in dimercapto-propanol an agent effective against the arsenical blister "gas" lewisite.[18] Since this discovery during the war, the substance has been known as British anti-lewisite, or briefly, BAL. This drug is supplied as a solution in oil by Hynson, Wescott and Dunning. The dose is 0.025 cc. of the 10 per cent solution (2.5 milligrams) per kilogram body weight. This is administered every four hours the first day or two, and then two injections per day are given for ten days or until recovery is complete.

After its protection against arsenical poisoning associated with lewisite[23] became known, dimercapto-propanol was tested as an antidote against various arsenicals, including arsphenamine and oxophenarsine. Its clinical effectiveness against poisoning by antiluetic drugs has been reported by Eagle and Magnuson.[7] Because the antidotal properties of BAL are thought to be due to the sulfhydril (—SH) radical, it has been tried experimentally in poisoning by mercury, lead, cadmium, antimony and a number of other metallic poisons known to react with sulfur to form insoluble compounds, as does arsenic.[8,22] That factors other than the simple reaction between sulfur and the metal are involved is shown by the fact that BAL is highly effective against mercury, but not against lead, and only slightly against antimony and cadmium. It seems to be of some value against poisoning by gold as used in treating arthritis.

Dimercapto-propanol has taken much of the terror out of poisoning by ant paste containing arsenious oxide, or by corrosive sublimate. However, it does not supplant the first aid measure of washing out the stomach and the administration of saline purgatives to remove unabsorbed poison from the digestive tract. It does, however, seem to inactivate absorbed arsenic or mercury and hasten their excretion. Present experience indicates that the recommended dose of dimercepto-propanol is without danger; it sometimes causes giddiness, sweating, nausea and headache.

SULFAMETHAZINE

Sulfadiazine was a distinct advance in the development of sulfonamides with respect to three important criteria, rate of absorption, rate of excretion, and rate of acetylation. Each of these factors was further improved by methylating the pyrimidine nucleus of sulfadiazine to form sulfamerazine, and now a second methyl radical has been added to form sulfamethazine, which is the most rapidly absorbed

and most slowly acetylated and excreted of the series. This improvement in the pharmacology of the sulfonamides accomplishes two important results: (1) the therapeutic concentration of sulfamethazine in the blood is more quickly reached, and more prolonged, and (2) the incidence of crystalluria is reduced. The crystalluria is reduced not only because of the slower formation of acetylsulfamethazine, but also because acetylsulfamethazine is more soluble than the acetyl-derivatives of other sulfonamides used clinically. The antibacterial potency seems equal to that of sulfadiazine. Although animal experiments indicate no greater toxicity than with sulfadiazine, conclusions concerning clinical toxicity must await more extensive clinical experience.

The table compares in a general way some of the pharmacological relations.

	Absorption	Acetylation	Excretion
Sulfadiazine	3-4 hr.	40%	10 hr.
Sulfamerazine	2-3 hr.	25%	15 hr.
Sulfamethazine	1½-2 hr.	10-20%	18 hr.

CURARE

Curare, the South American arrow poison, remained a pharmacological curosity and physiological tool until the industry and scientific interest of Richard Gill established the true botanical source and methods of preparation of the crude drug.[10] A biologically standardized mixture of alkaloids has proved to be of practical value in reducing the dangers of metrazol and of electroshock therapy of psychoses, in bringing about muscular relaxation during nitrous oxide, ethylene, and cyclopropane anesthesia, and in reducing spasticity in poliomyelitis and in spastic paralyses caused by upper motor neurone lesions. Finally, one of the most active alkaloids, d-tubocurarine, has been synthesized and is now available for clinical use.

MODE OF ACTION

Curare alkaloids have two types of pharmacological effect—production of strychnine-like convulsions and myoneural junction paralysis. With preparations employed clinically, only the paralytic effect is seen; the convulsive effect is, however, characteristic of certain galenic preparations tested in our laboratory, but the constituent responsible is not known.

It is the paralytic action which is of therapeutic value. By careful adjustment of dose, undesired muscular tension can be diminished or abolished, without interfering with desired voluntary movement and respiratory activity.[19,20] However, this ideal situation is not always obtained; respiratory muscles may be paralysed. It is important, therefore, to have at hand means of resuscitation, particularly oxygen and mask, and neostigmine methylsulfate injection. Neostigmine (Prostigmine) opposes the paralytic effect at the myoneural junction, by interfering with the destruction of acetylcholine. The exact relation of curare alkaloids to acetylcholine synthesis, action, and destruction is not clear, but present opinion is that it interferes with the synthesis rather than the action.

ADMINISTRATION

In anesthesia and as a corrective in shock therapy, curare is administered intravenously. The action develops within a few seconds, and because of individual variation in susceptibility, the injection should be made slowly over a period of 30 to 90 seconds to avoid overdose. Duration of action from the intravenous administration is 15 to 90 minutes.

In the treatment of spastic diseases, d-tubocurarine hydrochloride is suspended in peanut oil containing 4.8 per cent white wax. The concentration of d-tubocurarine hydrochloride is 3 per cent, so that 1 cc. contains 30 milligrams of the drug. This suspension is administered intramuscularly or subcutaneously in a dose of 0.4 to 2.5 cc. two to four times weekly.

CONTRAINDICATIONS

Curare must not be used in myasthenia gravis or other myasthenic states. Since the alkaloids are excreted by the kidney, its use in the presence of renal disease is contraindicated or should be attempted with caution.

TYROTHRICIN

The concept of antibiotic substances is as old as the science of bacteriology, for Pasteur in 1877 observed inhibition of growth of anthrax by certain air born microorganisms and suggested therapeutic possibilities of this phenomenon.[12] Kolmer mentions other early instances of recognition of the antibiotic principle and attempts at therapeutic application, such as the discovery of the antagonism of Staphylococcus aureus for the diphtheria bacillus and of Pseudomonas pyocyanea for a number of microorganisms, during the first decade of the twentieth century. Yet when Fleming made his observations on Penicillium notatum, in 1929 to 1932, our minds were not ready for the practical development of the idea. It seemed to require the impetus of the discoveries of Dubos and his collaborators regarding the antibiotic properties of soil bacteria, and especially of Bacillus brevis in 1931 and subsequent years, out of which tyrothricin was developed, to prepare our minds for the acceptance of penicillin.

SOURCE AND CHEMISTRY

The original material obtained by Dubos from Bacillus brevis was found effective against gram-positive cocci and was called Gramicidin. It was soon discovered that the original gramicidin was composed of two substances, one effective against both gram-positive and gram-negative bacteria. This latter fraction was called tyrocidine. The material effective against only the gram-positive organisms retained the name gramicidin, and the mixture of the two is marketed under the name Tyrothricin.

Gramicidin and tyrocidin are both thermostable polypeptids, insoluble in water but soluble in alcohol.

ABSORPTION

Tyrothricin is poorly absorbed from the gastrointestinal tract, as well as from wound surfaces and

mucous membranes, since systemic effects are not observed from such administration. It is, however, absorbed from subcutaneous, intramuscular and peritoneal injections.

SYSTEMIC EFFECTS

When administered intraperitoneally, tyrothricin has been shown to possess antibiotic properties in vivo. However, the therapeutic index is small, since it produces hemolysis, and repeated injections have produced degenerative changes in many visceral organs of experimental animals.

METHOD OF ADMINISTRATION

Because of toxicity from parenteral injection, administration is limited to topical application.

The alcoholic solution supplied by the manufacturer is diluted with distilled water (saline causes a clumping and precipitation) to form a colloid suspension of usually 20 to 50 milligrams per 100 cubic centimeters. This is used for irrigating and as a wet dressing.

CLINICAL USE

Tyrothricin is of greatest value as a wet dressing for infected surfaces where gram-positive cocci are involved. Open, infected wounds, such as traumatic injuries to soft tissues, infected burns, osteomyelitis, opened paranasal sinuses or mastoid cells respond well to treatment with tyrothricin. When used as an irrigating fluid, or as drops for the nasal passages, good results have been reported, but since contact with infected tissue is of such short duration, and since continued contact of the agent with the infecting agent is required for bacteriostatic action, the role of the antibiotic agent as used in this way is of doubtful significance. This statement might also apply to reported benefits in the infections of the conjunctiva. However, the mechanical factors here are different from those in the nose, and are in favor of prolonging contact of the antibiotic agent with the infecting organism.

STREPTOMYCIN

Streptomycin is a thermostable, water soluble, nitrogenous base, obtained from Streptomyces griseus. The hydrochloride salt is the form dispensed for clinical use. In the dry form streptomycin or its hydrochloride may be stored at room temperature (up to 85 degrees F.) for a year without loss of potency. Sterile aqueous solutions may be kept in the refrigerator for one week. Autoclaving destroys more than half the potency. Like so many of the new antibiotic materials obtained from microorganisms, it is for all practical purposes nonabsorbable from the alimentary tract, but well absorbed when injected intramuscularly. Efforts to delay or prolong absorption, as with oil and wax, have thus far failed. Therefore the aqueous solution is employed most generally. Excretion is rapid, so that, as with penicillin similarly administered, the blood concentration falls rapidly. Injections every two to four hours are required.

The dose was at first expressed in units, but since streptomycin is now produced in a chemically pure form, the concept of units is important only in relation to assay of the concentration of streptomycin in the blood, during administration. One milligram of streptomycin is equivalent to approximately 1,000 units. The usual daily dose varies from 0.3 to 1 gram.

TOXICITY

Animal tests gave evidence of unusually low systemic toxicity, both acutely and chronically administered. However, during clinical trial it became apparent that the auditory apparatus, especially the eighth cranial nerve, is sensitive to a deleterious effect of streptomycin, and that partial or complete deafness occurs in many patients. Prodromal symptoms are low pitched tinnitus and vertigo. As yet, no explanation of this specific nerve sensitivity has come to my attention.* Whether other nerves may be injured is not clear; at least one case of intractable hiccough is known to have followed the use of streptomycin. The casual relation, however, was not proven.

Allergic reactions occur, and sensitization may develop, although it is unusual. In experimental animals, renal injury has been produced by massive dosage; this may explain the occasional appearance of casts in patients undergoing streptomycin therapy. Alkalinization of the urine prevents formation of these casts.

CLINICAL APPLICATION

Clinical infections with Pasteurella tularensis (tularemia) yield to streptomycin therapy with remarkable rapidity. Other bacterial diseases which may be considered as indications for streptomycin therapy are those due to Hemophilus influenzae, Eberthella coli, Proteus vulgaris, Klebsiella pneumoniae, Aerobacter aerogenes, Pseudomonas aeruginosa, and the various Salmonellae. Urinary tract infections, meningitis, peritonitis, or bacteremia caused by these organisms often respond well to the administration of streptomycin. In urinary tract infections, the efficacy of treatment is increased by alkalinization of the urine.

The tubercle bacillus in vitro is quite susceptible to streptomycin, and almost every type of clinical tuberculosis has been the object of streptomycin therapy. The greatest benefits reported are with miliary tuberculosis and localized lesions of the upper respiratory tract; tuberculous meningitis responds for a time to streptomycin, but relapse is the rule.

* After this paper was in press, there appeared an article by Lewis D. Stevenson, et al. (Proc. Soc. Exper. Biol., & Med., 65:86-88, May, 1947) describing degeneration of cells of the ventral auditory and vestibular nuclei in the pons.

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Vector Potentialities with Respect to the Spread of Insect-Borne Diseases of Man in California

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TOWARD the end of World War II when American military personnel were beginning to return to the mainland from the Pacific and CBI theaters of war, many for hospitalization, there was considerable apprehension that exotic diseases might thus be introduced into the United States. After V-J day with greatly increased numbers of troops returning from these areas, authorities fully expected severe epidemics, particularly of exotic strains of malaria. Public health officials feared that virulent foreign strains of not only malaria but also other infections might be introduced by infected persons themselves as well as by infected exotic insect vectors as "riders" on airplanes and ships. The most likely invaders would certainly be parasitic infections, and among these, exotic diseases traceable to certain protozoal, rickettsial and helminthic parasites and viruses transmitted by insects and their kin such as ticks and mites.

Never before had the vector problem loomed so prominently the world over. California appeared to be highly vulnerable because of its exposure to the Pacific and particularly because it was feared its climate might be inviting to tropical and sub-tropical infections as well as to their appropriate vectors. It was important then and is of importance now to know what vectors or potential vectors present in California might lend themselves to the spread of parasitic infections if newly introduced. Also what are the potentialities of foreign vectors?

It is a noteworthy fact that there have been no consequential epidemics traceable to returning military personnel. Interceptions at quarantine barriers of dangerous vector insects were numerous. It has been pointed out on other occasions that this situation was due to the vigilant cooperation between the Army, Navy and the Public Health Service through the Inter-Departmental Commission which set up effective barriers to prevent the introduction and spread of noxious and vector insects and disease reservoir animals. In this matter the Navy carried a heavy burden. War-time quarantine measures were not only designed to protect our military personnel but also to give protection to the civilian population. Everyone concerned with this type of work was on his toes during the wartime emergency. Disinsectization of aircraft became a matter of serious concern. It is time again that we were reminded of our responsibilities in relation to the possible introduction of unwanted vector insects and exotic diseases either by means of aircraft or ocean vessels.

We were mightily concerned about such matters, during the latter part of the war and early post-war period. We should not tolerate an easing up now. Troop movements are now a very minor matter compared with our increasing commercial traffic with the Pacific Islands and the Orient. High levels of efficiency must be maintained at our quarantine barriers in Hawaii (where quarantine has always received strict attention), at those on more remote island frontiers, and particularly at our California ports (air as well as sea).

It is pertinent to point out that more than 99 per cent of the army hospitalizations listed under incidence of tropical diseases in World War II were insect borne infections (see Chart 2 on page 7, *American Journal of Tropical Medicine*, January, 1947). Insect borne diseases listed were malaria (460,872), dengue (84,090), sandfly fever (12,434), scrub typhus (6,861), filariasis (2,151), leishmaniasis (307), and relapsing fever (220). It is also a well established fact that much of the incidence of the dysenteries was traceable to flies, particularly to the blow fly, *Chrysomyia megacephala*, a potent food contaminator and an insect which we should very much dislike having introduced into California.

Few threats to the health of the Americas have equalled that of the invasion of Northeast Brazil by *Anopheles gambiae* in 1930 via Natal from Dakar, Africa, resulting in a huge toll of malaria. The introduction of *Aedes aegypti*, the yellow fever mosquito, at a much earlier date also from Africa is its only rival. The introduction of *Anopheles gambiae* almost certainly by fast moving mail-carrying French destroyers resulted in 5,513 malaria deaths in 1938 and 1939 and more than 185,000 persons in the invaded area under treatment for malaria. It cost considerably more than $2,000,000 to eradicate the invader and in 1943 the presumably "eradicated" invader made a comeback. This species had found optimum habitat conditions in that portion of Brazil which made eradication a serious matter.

As already stated there have been numerous interceptions of dangerous insects by our federal quarantine services, agricultural and public health. Our California shores must never be invaded by such dangerous exotic insects. It is worth pointing out that neither *Anopheles gambiae* nor *Aedes aegypti* have gained a foothold here; however, the latter has been intercepted many times. We may be fortunate in having an *unfavorable* climate for *Aedes aegypti*. Otherwise, were it successfully established, we might have dengue fever sweep over the state at intervals, as it does in several states where this mosquito abounds.

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We have no mosquitoes in California which can compare with either *Anopheles gambiae* or *Aedes aegypti* in domesticity, an important factor in maintaining constant and close contact between a disease vector and its host, hence of great importance in disease transmission. However, it is conceivable that an insect with a high degree of domesticity may have low potentialities in the chain of infection. An insect may very successfully receive the pathogen from a human source or reservoir animal within its associational complex, *i.e.*, it may possess a high infection potential and yet may not be successful for various reasons in passing on this infection to man or other animal hosts. It may be said, then, to have a low transmission potential. Experimental laboratory infections may be high, but for environmental reasons largely, transmission in nature may be low. What, then, does make an arthropod a good natural vector? A simple answer to this question as it applies to arthropod vectors in general is exceedingly difficult, because of the many factors involved. The question becomes less difficult if applied to anopheline mosquitoes. The answer has been given that "Any anopheline species will be an important natural vector of malaria if at any time in any area it repeatedly takes human blood, meanwhile surviving natural hazards in sufficient numbers and sufficiently long to permit a measurable malaria sporozoite index to develop." Temperature may play an important role and result in anophelism *without* malaria.

MALARIA VECTORS

Our California malaria vectors, *Anopheles* species, of which there are four, fortunately do not have a high degree of domesticity and are preponderately zoöphilous. *Anopheles maculipennis freeborni* is more commonly found in dwellings than the others and is our only important vector of malaria, yet precipitin blood tests show that most prefer blood of cattle, only 3-5 per cent feeding on human blood. It occurs principally in our great Central Valley where it breeds primarily in sunlit seepage pools, often associated with irrigation. *Anopheles punctipennis*, though state-wide in distribution, is regarded as a weak vector and then only in the Western Sierra foothill counties. It breeds principally in quiet, shaded pools adjacent to smaller receding streams. It does not readily enter human habitations, but is regarded as a porch biter. It bites man readily. *Anopheles pseudopunctipennis franciscanus* has also a statewide distribution in California and because of its abundance might be a formidable vector except that it does not bite man freely and does not invade human habitations. *Anopheles maculipennis occidentalis* hugs the coast, being found most commonly in a narrow strip close to the Pacific where cool climatic conditions do not favor development of malaria oöcysts. It feeds well on man in the laboratory, but in nature does not invade human habitations freely. All four of these anophelines have been tested for susceptibility to foreign malarias by the United States Public Health Service (see *Journal of the National Malaria Society*, Dec., 1945, pp. 307-329) and all proved to be susceptible to infection by relapsing soldiers infected with *vivax* malaria from the South Pacific. Feeding habits, domesticity and climate of natural habitats, of course, govern the relative importance of the species in nature. There are many parts where there is "anophelism without malaria" which emphasizes the wastefulness and futility of nonspecific anopheline control operations as a means of malaria control. Full knowledge of the specific vector (particularly its ecology) enables us to protect ourselves intelligently and economically. *Species sanitation* implies that the control measures, if any are necessary, must fit the particular offending species. Practically all parts of California where dangerous anopheline mosquitoes occur are now protected by well organized "Mosquito Abatement Districts" and the State Department of Public Health provides subventions under a special act of the State Legislature and by inspections and special training courses keeps these districts at a high level of efficiency.

DENGUE AND OTHER VIRUS VECTORS

The yellow fever mosquito, *Aedes aegypti*, referred to above as not present in California, is a potent vector of several virus infections among them *yellow fever* and *dengue* in nature and arthropod borne virus encephalitides experimentally. As already stated, this mosquito has been intercepted at our seaports on many occasions, both in the larval and in the adult stages. Although there is little reason to fear that it may yet gain a foothold here, our safeguards must not be lowered; it does occur in Lower California and is a common species in many of our southern states. Another potent vector of dengue and of yellow fever experimentally is *Aedes albopictus*, also absent here, but common in Hawaii, the Philippines, North Australia, parts of the Orient, and many islands of the Pacific. Day-biting *Aedes* species of mosquitoes native to California, though fierce biters, lack the marked domesticity that is shown by the two virus vectors referred to above. We must not be too sure that dengue fever epidemics cannot occur in California simply because of the present lack of a suitable vector.

The spread of the *arthropod borne virus encephalitides* (*e.g.*, St. Louis and Western Equine Encephalomyelitis) is a different matter. Here we have experimental as well as ample field evidence incriminating several local species of mosquitoes, principally *Culex tarsalis* and *Culex pipiens*, both of which were until recently regarded as purely pest mosquitoes and of no public health importance. It is no longer tenable to draw a sharp line between pest mosquitoes on the one hand and vectors on the other. Even those species which seldom *enter* human habitations, but *feed* on wild and domestic mammals and birds may be drawn into the general epidemiological picture. Certain domestic and wild birds are proven temporary hosts of these viruses. In such cases the

feeding habits of vector mosquitoes (which are nocturnal) must comprehend birds, horses and man. Among the several laboratory incriminated species (and there are a dozen or more) the two species listed above fit the conditions excellently; they are abundant, widespread, feed on human, equine, and avian hosts, and invade human habitations freely. We do have a formidable situation on our hands and the State Department of Public Health is fully aware of this and is proceeding accordingly.

Japanese B virus encephalitis continues to cause considerable concern. This infection is endemic in Japan, Okinawa and adjacent territories where the principal natural vectors are *Culex tritaeniorhynchus* and possibly *Culex pipiens pallens*. The former does not occur in California. The infectibility of this virus to California species of mosquitoes has been studied experimentally. It must be concluded that with various species of mosquitoes implicated as vectors of encephalitic viruses and others decidedly under suspicion, health authorities, as already pointed out, cannot with accuracy divide mosquitoes into two distinct groups, namely, vectors and non-vectors (pest mosquitoes). For this reason it is wise to insist on a thorough program of mosquito *control* wherever human populations warrant public health action.

Furthermore in considering the encephalitides the fact must not be overlooked that *Russian spring-summer type of encephalitis* is transmitted to man by ticks (*Ixodes persulcatus*). We have in California numerous and widespread members of the genus *Ixodes*. Local vector implications are not known.

While *sandfly fever* accounted for 12,434 army hospitalizations, the danger of establishing this virus infection in California is probably very slight primarily because of the paucity of potential vector insects, namely, *Phlebotomus* flies, also known as sand-flies (*Phlebotomus*). Two species have now been described from this state, namely *Phlebotomus vexator* from Contra Costa County, and *Phlebotomus stewarti* from Kern County and Alameda County. Both foci are small and little is known about their feeding habits, other than that blood-filled females of *P. stewarti* have been collected in burrows of ground squirrels and field mice.

Sand flies are very tiny, most of them 1½ to 2 mm. in length, and quite delicate, very susceptible to the usual aerosols used in disinsectization.

FILARIASIS VECTORS

It has been reported that approximately 2,500 men in the Army and a somewhat greater number of men of the Navy and Marines became infected with *Wuchereria filariasis* in the South Pacific Area where the principal vector mosquito is *Aedes scutellaris pseudoscutellaris*, a day biting species. Well over 30 species of mosquitoes have been experimentally proven to be susceptible to filarial infections. Very few servicemen have shown microfilariae in the circulating blood, an essential factor in mosquito transmission of filariasis. Therefore, establishment of this disease through Army and Navy personnel on this coast is not probable, even though suitable vectors are present. The South Pacific vector named above is absent here, but experimental evidence indicates that several of our local species could lend themselves as vectors. It is of great importance to bear in mind that we do have an abundance of *Culex quinquefasciatus* particularly in the southern end of the state, and that species is an important vector of filariasis in many parts of the Pacific region. This again emphasizes the importance of excluding or circumscribing human carriers (persons having microfilariae in their blood) originating in endemic regions, and as for other infections already mentioned, in supporting general mosquito control operations here.

Actually nearer at hand is the nodular filarial infection known as *Onchocerciasis* principally of the Pacific slope of Guatemala and Mexico. In Africa the infection occurs commonly in the Congo basin. More serious than the skin nodules caused by *Onchocerca volvulus* is the eye involvement in from 5 to 20 per cent of the cases, sometimes causing blindness. This filarial infection is transmitted from man to man by means of black flies (*Simulium*) which breed in swift flowing upland creeks. They are day biting insects. While proven vector species do not occur in California, we have over a dozen species of black flies, some of which attack man. Whether or not any of our species can serve as vectors needs to be determined experimentally. It should be pointed out, however, that a part of the projected route of the Pan American highway may be through endemic areas of the infection. It will be well for our public health officials and particularly quarantine officers to keep a weather eye on the onchocerciasis situation to the south of us.

The filarial worm, *Loa loa*, also known as the African eye worm, causing fugitive swellings (Calabar swellings) is transmitted in the African Congo by *Chrysops* flies (known here as deer flies) belonging to the horse fly family (Tabanidae). The symptoms of this form of filariasis may not appear until three to four years after infection. The author has observed a case in California showing fugitive swellings in a person having been in the African Congo. Whether our *Chrysops* species are tolerant to this infection is not known. Even though this were true there would probably be no public health menace because of the scarcity of human sources of infection and the small chance of a *Chrysops* fly biting two different persons.

RELAPSING FEVER VECTORS

There were 220 Army hospital admissions for relapsing fever during World War II as shown in the list of diseases referred to earlier in this paper, although it was not specified whether their infection was louse borne (epidemic) or tick borne (endemic). The causal organism common to both infections is generally referred to as *Borrelia (Spirochaeta) recurrentis*. However, in cases of the tick borne infection, the pathogen commonly takes the

specific name of the tick *(Ornithodoros)* vector, e.g., *Borrelia turicatae, Borrelia venezuelensis, Borrelia hermsi*, etc., largely because there appears to be a high degree of tick-host specificity or fastness. In California, relapsing fever is transmitted by *Ornithodoros hermsi* and *O. parkeri*, the former at elevations of 5,000 to 8,000 feet and the latter at lower elevations. *O. hermsi* favors chipmunks, which are reservoir animals of the infection. Several species of squirrels such as the tamarack are also hosts and likewise harbor the spirochaete. Infection may occur through the broken skin by contact with blood from these animals, whence the early name of the disease, namely "squirrel fever." Man, however, as well as other susceptible animals, becomes infected in nature usually by tick bites. As in Rocky Mountain spotted fever the infection is passed on from the female tick to the offspring through the eggs (transovarian contamination) so that one may become infected by the bite of female and male ticks as well as by any of the immature stages. Chipmunks frequently establish their nests in summer cabins in mountain resort areas and the ticks may thus infest the cabins. Since the ticks are only present on the body of the host animal for feeding purposes (a very short period—15 to 25 minutes), the expulsion of the chipmunks results in a lot of hungry ticks ready to feed on the human residents. Also, since these ticks are able to survive many months without feeding, summer resorters may suffer infection not only after a cabin has been closed all winter, but even after much longer periods of vacancy. It must be borne in mind, however, that these ticks in all active stages may feed on other non-human inhabitants of vacated cottages, such as wood rats, mice and even bats.

Other strains of relapsing fever occur in Central America, Mexico, and elsewhere, hence we must be on our guard against the introduction of soft ticks *(Ornithodoros* spp.) and, of course, infected reservoir rats and other reservoir hosts, particularly their tick parasites not now in this state.

VECTORS OF SCRUB TYPHUS

There were 6,871 army hospitalizations for tsutsugamushi fever (scrub typhus) as shown by the table previously referred to. Caused by *Rickettsia orientalis*, the infection is transmitted to man from rodent reservoirs (field mice) by certain species of chigger mites *(Trombicula)* endemic to the South and Southwest Pacific areas. As in relapsing fever, scrub typhus infection is passed on from the female mite through the egg to the offspring *(transovarian)*.

We are fortunate not to have widely distributed or even severe foci of chigger mites on this coast north of Mexico, although a more careful survey may reveal a wider spread of *Eutrombicula alfreddugesi*. As a matter of fact, knowledge concerning mites affecting man and beast in California is very meager. Scrub typhus is a dangerous disease and we must spare no effort to keep it out of California.

CHAGAS DISEASE VECTORS

Chagas disease, the causal agent of which is *Trypanosoma cruzi*, an endemic infection of man in regions to the south of us, presents another serious problem that should give us some concern. We already have suitable vectors as well as reservoir animals both of which have shown infections in nature. Infected bugs, *Triatoma protracta*, have been found in four or five localities in California (Fresno County, Los Angeles County, San Diego County). The wood rat *Neotoma* spp. appears to be widely distributed and is a suitable reservoir animal.

Conenosed bugs, also commonly known as kissing bugs, of the genus *Triatoma*, are widely distributed in California and are generally associated with wood rats *(Neotoma)*. Arboreal and terrestrial nests of the wood rats commonly harbor the insects. Conenosed bugs freely invade human dwellings and bite the inmates, usually when in bed; infection, however, is accomplished by "rubbing in" insect fecal matter dropped upon the skin. These bugs usually defecate when feeding and frequently bite the faces of sleeping persons, whence the name "kissing bugs."

VECTORS OF LEISHMANIASIS

Leishmania infections are not believed to be endemic in the United States, but it is generally agreed that this country might be invaded by anyone of the three leishmaniases provided a suitable vector were available. Kala azar is the visceral type caused by *Leishmania donovani* and *L. chagasi*; oriental sore, the cutaneous type, is caused by *Leishmania tropica*; and espundia, the muco-cutaneous type, is caused by *Leishmania brasiliensis*. While the latter is limited to Central and South America, the other two are widespread in the Mediterranean area, North Africa, India, South America and other parts of the tropical and subtropical world. There were 307 hospital admissions (Army) for leishmaniasis, according to the report previously referred to. All three leishmania infections are experimentally transmissible by the bites of one or more species of sandflies *(Phlebotomus* flies), minute crepuscular gnats already referred to as vectors of sandfly fever, a virus disease.

TYPHUS AND PLAGUE VECTORS

Louse borne typhus (epidemic typhus) continues to be a threat in thickly populated areas and demands constant vigilance as our population increases. Lousiness must not be tolerated.

Since *endemic typhus* is on the increase in California some space should be devoted to the flea transmission of this infection. Also some consideration should be given to the rat mite, *Liponyssus bacoti*, which has been incriminated as a laboratory vector. However, since considerable work is now in progress by several agencies, no further comments need be made here except to remark that flea vector potentialities with respect to endemic typhus and, of course, plague are intimately related to a growing rat population. No doubt, flea longevity may also play an important role in this connection.

It is not entirely out of place to speculate to what extent our increasing rat population is the result of increased backyard poultry production. With the end of the war this problem should be lessening. Then, too, higher garbage collection fees, even though only a few cents per family is involved, has resulted in more backyard disposal by individual householders, tending toward an increase in the rat population and, incidentally, in the production of flies, particularly blow flies. The menace of plague is discussed in great detail by Dr. K. F. Meyer in many of his publications. Of particular interest to the epidemologist are "Ecology of Plague" (*Medicine*, May, 1942) and "The Known and the Unknown in Plague" (*Amer. Jour. Trop. Med.*, Jan., 1942).

VECTOR LONGEVITY

Without a consideration of vector longevity, with respect to the spread of diseases, a discussion of vector potentialities would be incomplete. Considerable experimental work has been done on the extended viability of insect transmitted pathogenic agents. The vectors of malaria, dengue, yellow fever, and relapsing fever remain infective throughout the life of the insect, and in some infections such as endemic relapsing fever the pathogen is carried over from female to offspring by transovarian infection. As many as four generations of ticks may thus carry the infection and be able to transmit it, thus extending the danger over a period of two or more years. This situation adds materially to the complexity of the relapsing fever problem in our Sierran resort areas where *Ornithodoros hermsi* occurs.

It is not generally known that fleas "enjoy" a tremendous longevity. Unfed adult rat fleas (*Nosopsyllus fasciatus*), vectors of endemic typhus fever, may remain alive 95 days; however, when fed, they may remain alive 106 days (Bacot). *Xenopsylla cheopis*, the oriental rat flea, a dangerous vector of plague, is reported to remain alive 100 days when fed. When one includes the maximum duration of the immature stages of total possible maximum longevity for the first named species may reach 680 days and the later 376 days. Of even longer life is *Pulex irritans*, the cosmopolitan human flea which is reported to have a maximum longevity of 966 days.

The Relation of Deep Roentgen Therapy to Aero-Otitis Media*

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WHILE on duty with the Air Corps as a flight surgeon and as an otolaryngologist, the author observed several cases in which trained flying personnel were permanently grounded because of persistent aero-otitis media. In 1943, a program to attempt to eliminate the small but definite waste of flying personnel was instituted, and to accomplish this it was decided that radiation therapy to the Eustachian tube tissue, if indicated, should be done. By indicated, it is meant that a diagnosis of Eustachian lymphoid hypertrophy causing defective patency of these tubes be established.

Let us begin by proving theoretically that such therapy has a sound basis. The mucous membrane lining of the Eustachian tubes may be smooth throughout but more commonly appears corrugated, evaginated, with ejections and longitudinal folds, the latter being more prominent near the pharyngeal end of the Eustachian tube and harboring lymphoid tissue.[8] The subepithelial tissue is composed of three layers, i.e., a basement membrane, a lymphoid tissue layer and a glandular layer—the last so named because of compound tubulo-alveolar mucoserous glands which are more apparent near the pharyngeal end.[6] The presence of the lymphoid tissue has been proven by Polvogt and Babb.[8] In fact, they have demonstrated the presence of it in all parts of the peri-Eustachian tissue in normal individuals. For the most part, authors on this subject agree that such lymphoid tissue in and about the Eustachian tube is always present with chonric diseases of the nose, nasopharynx and Eustachian tubes. They further believe that lymph nodules may appear anywhere throughout the tunica propria of the Eustachian tubes but are more numerous in the pharyngeal portion. Crowe and Baylor[3] from their experience of the study of deafness in childhood believe the lymphoid tissue is more hyperplastic in childhood than in later life. Farrior[4] has reported he has noted the presence of lymphoid nodules even so high in the Eustachian tubes as to be in the middle ear.

PATHOLOGY

Histopathologic changes in the Eustachian tubes, except for rare new growth and foreign bodies, are mainly those of inflammation and allergy. These inflammatory changes occur in the epithelial and subepithelial layers. According to Farrior[4] such inflammatory changes are those of increased mucoserous activity, edema, lymphoid hyperplasia and vascular congestion. Crowe believes that this lymphoid tissue in the nose and in the adjacent areas easily undergoes hyperplasia but that such hyperplasia is more active in children than adults. In healing, the above processes are reversed with or without scar tissue formation. However, after repeated inflammatory episodes, the lymphoid hyperplasia persists.

Teed,[10] in pressure chamber tests on 5,110 men, reported that hypertrophied tonsils and adenoids, contrary to a common belief, are not essential for the development of Eustachian tube obstructions. However, all of his cases failing in the pressure chamber test were observed to have lymphoid tissues about the Eustachian tubes, the fossa of Rosenmüller, or both.

RADIATION

Since it has been shown that lymphoid tissue does exist in and about the Eustachian tube and that it is an integral part of the mucous membrane of this area, it is logical to assume that adequate removal by surgical means is an impossibility. It is the size, the location and the chronic inflammatory changes of the lymphoid tissue which destroy the patency of the Eustachian tubes. Radiation is recognized as being of great value in causing regression of hyperplastic lymphoid tissue and an increase in lymphatic circulation. Properly used, it is a safe, effective and painless method of reducing lymphoid tissue in and about the Eustachian tube which cannot be removed by surgical therapy. Crowe[2] has used such therapy over a period of ten years in his interesting and instructive studies of deafness in children due to Eustachian tube obstruction.

The rationale for irradiation rests on the fact that lymphocytes and lymphoid tissue have a high sensitivity to irradiation.[1] Small doses of irradiation result in disintegration of the leukocytes and improved lymphatic circulation. Histopathologically, following this therapy, there is degeneration of old and young lymphocytes within the lymph follicles and absorption of the products of cellular disintegration. The most profound changes occur in the large cells composing the large germinal centers of the lymph nodes.[9] Schenck[9] in his study of the irradiation of lymph follicles took lymphoid tissue biopsy before irradiation, at two-week, four-week, and six-month periods following radiation. He found by comparison the significant fact that in the two-week and four-week specimens there was an increase in the number of lymph channels, that minute hemorrhages had occurred in the lymph nodes, and that young lymphocytes presented marked depression so that only cell fragments remained. In the six-month specimens, he found a striking and unexpected increase in the number of lymph channels, a loss of evidence of chronic inflammation and an absolute decrease in the fibrous tissue.

* Read before the Section on Eye, Ear, Nose and Throat at the Seventy-fifth Annual Session of the California Medical Association, Los Angeles, May 7-10, 1946.

Because of the high sensitivity of lymph tissue to irradiation, the necessary dosage employed in Eustachian irradiation is far below that which would cause any significant injury to the surrounding tissue. Besides the effect on lymphoid tissue, radiation also decreases the hypersecretory activity of the mucous glands. Therefore, it can be assumed that radiation may be used to reduce the size of the obstructing lymph nodes, to clear the lymph channels, decrease the secretion of the mucoserous glands and, therefore, to help restore the ventilating and aerating function of the Eustachian tubes. Contrary to the therapeutic effects of radiation, repeated Eustachian catheterizations may ultimately aggravate the obstruction as a result of continued irritation and scar tissue formation. We found that nasal decongestants are of value only in acute and subacute Eustachian salpingitis.

The type of irradiation to be employed is open to question. Crowe and Baylor,[3] Fowler [5] and Burnam [1] prefer radium or radon because in the long run it is cheaper and more easily applied. Radium and radon have the advantage that they may be applied intranasally to radiate directly the nasal and peri-Eustachian tissue without radiating intravening tissue. The disadvantages are that the greater and naturally more effective dose of radiation is given to only the pharyngeal end of the Eustachian tube and does not effect that lymphoid tissue that may be in the more distal portions of the Eustachian tube.

Roentgen-ray therapy has the advantage of permitting treatment of the entire Eustachian tissue, which is not possible with local radium therapy. But there is also the disadvantage of irradiating intravening tissue which is not involved in the process of faulty Eustachian ventilation. A thorough study of the effect of irradiation by x-ray, radium, or a combination of radium and x-ray, failed to reveal any distinguishing histologic changes produced by one method as compared with the other, provided adequate irradiation was applied.[7]

It must be stated at this time that one must never lose sight of the importance of removing the cause of the inflammatory process. An extensive and exhausting search must be made for such cause in the nose, ears and surrounding structures.

DOSAGE

In our series of cases, roentgen radiation, given under the expert supervision of well trained radiologists was used because treatment could be given over the entire Eustachian tube and because the disadvantages of this method were considered to be of no particular consequence. The x-ray radiation was given through a lateral port on each side with 10 cm. circle centered over the Eustachian tube, the following factors being utilized: 200 kw., 10 M.A., 50 cm. distance, 0.5 mm. of copper with 1 mm. of aluminum added filtration. Treatment was given at seven-day intervals with an average dose of 100 r to each side per treatment. The number of treatments was either four or six, depending on the apparent severity of Eustachian obstruction. The total average dose was 400 r or 600 r to each side. Since this amount of radiation is considered minimal, it was possible for us to repeat a second series of treatments after six or eight weeks without possible damage to the tissue irradiated. It was noted that following irradiation therapy the patient had a mild to moderate redness of the lateral nasopharynx. The patients also complained of some mild difficulty in swallowing, as a result of a tugging sensation in the nasopharynx, but otherwise were uniformly pleased with the therapy. They were quite skeptical that anything so simple could given them the desired results.

CRITERIA FOR THERAPY

We had approximately 150 men who had either persistent aero-otitis or deafness at high altitude referred as possible cases for radiation therapy. Of these, only 37 cases met our criteria warranting radiation therapy. In the work-up of our cases we first proved by pressure chamber tests that the individual had true difficulty in aerating the middle ear. It was fortunate that a pressure chamber was available, permitting a definite test of faulty Eustachian ventilation. The test was repeated following the course of roentgen treatment. In the work-up of the individual case a careful clinical examination of the nose, paranasal sinuses, nasopharynx, pharynx and ears was made. A dental check for faulty bite and a molar test were made. Allergic conditions were diagnosed by history and microscopic study of the scrapings of the nasal mucous membrane. It was attempted clinically to evaluate the patency of the Eustachian tube by inspection of the membrana tympani for retraction, particularly in the area of Shrapnell's membrane. A moderate Valsalva's inflation attempt was made by the patient and during this procedure the membrana tympani was observed for motion and fullness. If this occurred readily, it was surmised that the Eustachian tube was ventilating adequately. In none of the cases which we treated was this Eustachian patency demonstrable. Siegel's otoscope was also employed to determine the motility of the tympanic membrane and the mobility of the aural ossicles. No patient was considered for radiation therapy who had active ear disease. Nasopharyngoscopical examination of all cases was made in an effort to observe directly the Eustachian orifice and the tissue surrounding these orifices. It was noted that some of those cases which had no true difficulty aerating the middle ear had what could be considered excessive lymphoid tissue about the Eustachian tube. It was our experience that it cannot be assumed that the mere presence of excessive lymphoid tissue about the Eustachian tube denotes interference with the ventilating of this tube. If a pathologic condition was found which could account for the stimulation of the lymphoid tissue in and about the Eustachian tube, this condition was first corrected. When no pathologic condition could be found to account for the blockage and yet the pressure chamber test proved such a condition existed, it was inferred that hyperplastic lymphoid tissue existed deep along the tube. In all our cases, a psychiatric examination was

made by a psychiatrist because of the tremendous part psychoneurosis plays in ear symptomatology on aerial flight in war time. It is to be noted here that approximately 50 per cent of the referred cases were eliminated from radiation therapy because of psychoneurosis manifested by ear complaints. When it was found that an individual did not have allergic condition; chronic disease of the ear; chronic infection in the nose, paranasal sinuses or pharynx which would stimulate and perpetuate lymphatic tissue hypertrophy about the Eustachian tube; or psychoneurosis; then radiation therapy was given.

CASES

It should be noted that all cases which were given therapy complained of inability to aerate the middle ear on flight and that some complained of deafness. As 27 of these cases were free of tonsillar tissue, and ten were not, no relation could be drawn as to the effect on tubal obstruction of such tissue. Nine of the 37 cases, in addition to the complaint of inability to aerate the ear, complained of deafness; and hearing tests supported these complaints. Twelve of the cases did not reveal any excessive lymphoid tissue about the Eustachian orifices upon nasopharyngoscopical examination, whereas the other 25 did present an excessive lymphoid tissue picture about or near the Eustachian orifices.

Four to six weeks following the roentgen therapy the patients in this series were reexamined. Those who had complained of deafness associated with faulty Eustachian patency were found to have normal hearing. All except one passed as normal the follow-up pressure chamber and aerial flight tests. They were then returned to full military flying duty and had no further known ear difficulty. The one exception revealed an error in our preradiation work-up and is an important illustration of the tremendous importance of psychoneurosis in wartime. The patient in this case was given the usual workup, and the original pressure chamber test report was that the patient actually experienced true difficulty in aerating his middle ears. Following the radiation therapy, the pressure chamber test was again run. It was proven that this patient had no real difficulty in aerating his middle ears even though he complained when on aerial flights. The aviation physiologist who ran this test stated, "The subject certainly had no organic trouble, since he was able to descend through dense atmosphere at the rate of 6,000 feet per minute without traces of aero-otitis media." Furthermore, he was found to complain of ear pain when he thought he was being raised to a high altitude in the pressure chamber when actually he was maintained at ground level at all times.

Let us go over in more detail a rather typical case of persistent aero-otitis. The psychiatric and E.N.T. examinations were all negative except that the Eustachian orifices were surrounded posteriorly by excessive lymphoid tissues. Pressure chamber tests on this patient revealed definite difficulty in aerating the ears. He was unable to tolerate gradual pressure chamber changes of 200 feet per minute. After study it was felt that radiation therapy was warranted and such therapy was given. After the lapse of one month's time to allow for the subsidence of local tissue reaction, pressure chamber tests were again run in addition to aerial flight. The results of both of these tests showed no difficulty in aerating either of the ears. In the aircraft test, at an altitude of 15,000 feet, the plane was made to dive losing altitude at 5,000 feet per minute down to an altitude of 5,000 feet. Examination at this time showed the ear drums as normal and that the patient's previous symptoms were absent. The pressure chamber test was equally successful.

CONCLUSION

Since the series of cases presented is small, it is difficult to draw any definite conclusions. However, it is hoped that the results obtained in our series will stimulate sufficient interest in such therapy to cause more widespread usage of this treatment in the type of cases for which we have found it beneficial. Certainly, the commonness of aerial flight for business and pleasure is going to bring to prominence faulty Eustachian patency as never before. It must be remembered, though, that the indiscriminate use of deep x-ray therapy for every case of aero-otitis or conductive deafness must be carefully avoided. Unfortunately, we were unable to follow the patients satisfactorily for any appreciable length of time following completion of the therapy. Follow-up study would be of great value in determining the permanency of the results. If the tissue again undergoes hyperplasia following this therapy and does so within a short space of time, it will detract from the value of such therapy. However, at the present time of investigation, results are sufficiently satisfactory to warrant the use of this therapy in properly selected cases.

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Urachal Cysts with Malignant Invasion of the Bladder*

Three Case Reports

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IT is desired to discuss three patients presenting cysts of the urachus with invasion of the bladder by malignancy arising within the cysts. These patients were observed by the author between September, 1943, and January, 1945. The literature has been ably reviewed by others[1,2,3] and will not be repeated here.

Case 1

A white male, aged 68 years (Case No. 123850) was admitted to Mercy Hospital, San Diego, September 11, 1943, and died September 15, 1943. Chief complaints were hematuria, frequency, increasing general debility, and enlarging lower abdomen of six months' duration. Examination was essentially negative excepting for signs of deterioration, prominent superficial abdominal veins, and a cystic tender mass occupying the lower one-half of the abdomen.

Laboratory studies revealed moderate leucocytosis, and secondary anemia. The urine was packed with erythrocytes, and presented 10-15 pus cells in each high power field. The blood Kahn test was negative. The Ascheim-Zondek test was negative for Prolan A.

The chest film was essentially normal. Excretory urograms revealed a normal left kidney, moderate hydronephrosis on the right, and lateral displacement of both ureters. Cystograms presented displacement of the bladder to the left, and irregularity of bladder outline.

Cystoscopy disclosed a papillary tumor arising in the dome of the bladder and extending downward to include the anterior lip of the prostate, and the right lateral wall of the bladder. Biopsies were taken. The pathologic report was, "Epidermoid Carcinoma of the Bladder (transitional cell type), Grade III cellular malignancy."

The final diagnosis was, "Cyst of the Urachus with Carcinoma Invading the Bladder." The patient was treated symptomatically only, because the lesion was felt to be inoperable.

Case 2

A white male, aged 51 years (Case No. 6736), was seen in the office on January 11, 1945. Chief complaints were hematuria, frequency, and dysuria. Examination revealed moderate general deterioration, a firm cystic mass filling the lower abdomen from navel to symphysis. The urine was packed with blood and presented 10-15 pus cells in each high power field.

Cystoscopy disclosed a large necrotic papillary tumor arising in the dome of the bladder and including the anterior and right lateral walls. Retrograde pyeloureterograms revealed moderate bilateral hydronephrosis, and hydroureter of the upper two-thirds of both ureters. Both ureters were slightly displaced laterally, and the right ureter was displaced markedly anteriorly.

The diagnosis was made of Cyst of the Urachus with Carcinoma Invading the Bladder. Hospitalization was advised but refused by the patient. No biopsy was obtained.



Cyst with attached rectus muscle above, and the cuff of bladder with invading neoplasm below.

Case 3

A white female, aged 38 years (Case No. 131829), was admitted to Mercy Hospital June 6, 1944, and was discharged June 28, 1944. The only complaint was intermittent hematuria for one year. For this she had been treated with endocervical radium with resultant artificial menopause without relief of the hematuria. Examination was negative except for a probable fibroid tumor of the uterus, and a sense of deep induration in the midline suprapubic area.

The blood count was normal. The urine presented 20-30 pus cells in each high power field, but no blood.

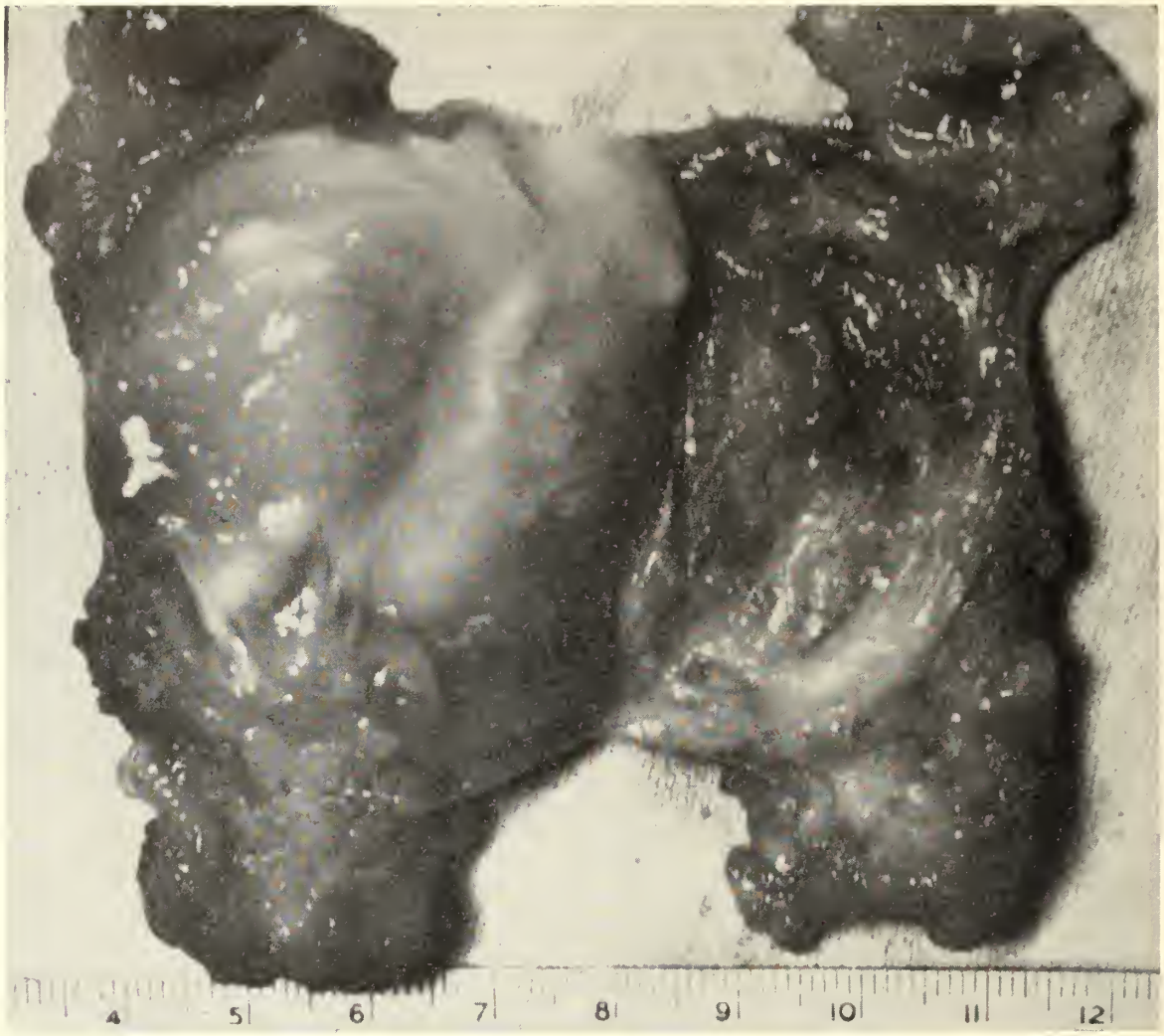
Cystoscopy revealed a tumor 3 cm. in diameter arising in the dome of the bladder. This tumor was flat, glistening, and solid. It presented a medullary appearance similar to adenocarcinoma of the colon. Retrograde pyelograms were essentially normal.

Biopsy report was, "Infiltrating Adenocarcinoma, presumed origin in colon."

X-ray films of the chest, colon, and upper gastro-intestinal tract were negative. Sigmoidoscopy revealed no disease.

On June 8, 1944, through a lower left transrectus incision, a cyst of the urachus, 8 by 5 by 5 cm. in dimension, was exposed. Separation from the peritoneum was accomplished easily. The apex of the cyst, which was firmly fixed to the rectus muscle, was mobilized by excising a portion of the rectus muscle with the cyst. The dome of the bladder was incised, and segmental resection of the bladder with the included tumor and cyst was completed. The bladder was closed in two layers. Seven 1.5 millicurie radon seeds were implanted in the line of incision into the bladder. Three additional radon seeds were placed in the rectus muscle attachment of the cyst. The wound was closed in the usual manner with a penrose drain in the space of Retzius. A urethral catheter drained the bladder.

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Bivalved cyst with attached rectus muscle above, and the cuff of bladder with invading neoplasm below. Note colloid nature of the contents of cyst.

The pathological report was, "1. Colloid Carcinoma arising in the Urachus. 2. Colloid Cyst of the Urachus."

Postoperatively the patient did well and was discharged on the 20th postoperative day. The wound drained urine on the 25th day, necessitating further urethral catheter drainage. For two months the patient was troubled with much dysuria, which was felt to be due to the use of radon. On March 9, 1945, examination and cystoscopy revealed no recurrence of the tumor. The patient was in excellent health and busy driving one of the large passenger busses.

Reviews have been presented of three patients suffering from cyst of the urachus with invasion of the bladder by malignancy arising in the cyst. Certain impressions suggest themselves. Tumors of the dome of the bladder, with or without abdominal masses, papillary or medullary in appearance, should always call to mind cancer of the urachus. Transurethral means of therapy should never be used. With large cysts, hydroureter and mild lateral displacement of the ureters can be expected. Marked lateral, and/or anterior displacement should suggest lymphatic metastasis. Large cysts associated with marked invasion of the bladder and general decline suggest inoperability. Cysts of the urachus should be considered in the presence of midline tumors in females. The use of radon and deep X-ray therapy is of questionable value.

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Asphyxial Death Due to Pulmonary Cryptococcosis*

A Case Report

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A BRIEF presentation of the clinical and pathological aspects of a single case of pulmonary cryptococcosis seems warranted, not only because of the relative rarity of the disease, but because the true diagnosis was not made nor suspected until some time after postmortem examination.

The patient was a Mexican male laborer 38 years old who was admitted to the Southern Pacific General Hospital February 26, 1945, with the probable diagnosis of pulmonary tuberculosis, submiliary type. His chief complaint was shortness of breath of 15 days' duration. He had lost 13 pounds in weight during the preceding two months, had started coughing one month before entry and had been bringing up a mucoid sputum with the cough.

On physical examination the thorax was noted as symmetrical, wasted and emphysematous. The lungs were clear to percussion and auscultation except for decreased breath sounds over the right base posteriorly. In other respects there was nothing of significance noted in the physical examination.

The temperature variation was 37.2 to 37.6, with occasional rises to 38.3. On March 14, the temperature rose to a maximum of 40.2 but returned to its former level the next day. Blood pressure was 115 over 75.

Laboratory Examinations: Results of the Wassermann and Kahn tests were negative. Leukocytes numbered 27,000 with 95 per cent neutrophiles and 5 per cent lymphocytes. On two occasions (February 27 and March 19) urinalyses were negative. Three sputum examinations were made for tubercle bacilli and none was found.

The conclusions of the roentgenologist after x-ray examination on February 26, the day of patient's admission to the hospital were as follows: "It would be my impression that we are dealing with a form of submiliary lesions, possibly tuberculous. Evidence of pleuritis with adhesions and fluid at the right base."

A notation by a member of the staff of March 3 is as follows: "Believe we are dealing with obstruction of a major bronchus causing atelectasis of right lung due to either pressure from without or blockage from within."

On March 8 another member of the staff—with a *pre-operative diagnosis* of "tracheal obstruction—tumor?"—examined the patient with a bronchoscope and made the following notations: "Nodules visible at 5 o'clock 3 cm. below larynx. Large fungating tumor mass from 10 over to 3 o'clock about 6 cm. below larynx."

Postoperative Diagnosis: "Fungating tumor mass stenosing tracheal lumen to about one-sixth normal."

At this time a small biopsy specimen was removed and submitted for histological examination and diagnosis. The report follows:

"This small piece of tissue is 0.6 x 0.6 cm.

"Histological Examination and Diagnosis: Mucous polyp.

"Note: There are no evidences of malignancy. The surface of this tissue is covered with pavement epithelium and consists essentially of a soft, spongy mass of alveolar-like tissue throughout which are small, round, irregular-sized, psammoma-like bodies."

Therapy was largely symptomatic for relief of cough and attempted relief of dyspnea. Between March 14 and March 20 nearly one million units of penicillin and 390 grains of sulfadiazine were given.

On March 20 another bronchoscopic examination was made with the following results noted: "Unable to get beyond the large polyp mentioned previously. Was able to see two other polyps beyond the big one."

The patient continued a downhill course and expired March 24. Autopsy was performed and the tissues were submitted to the author for further examination.

The tongue, the tissues from the neck, the lungs, the aortic arch and the esophagus were received in one mass. The trachea and bronchi were filled with a thick, mucinous material which extended deeply into the bronchial trees of each lung. Scattered throughout the lungs were small indurated areas, suggestive of silicosis, and occasional mucinous-containing lesions. The lungs also contained irregular areas of emphysema, atelectasis and edema.

To the right of the trachea 2 cm. above the bifurcation was a cystic mass measuring 4.5 x 3.8 x 4.5 cm., and there was a similar mass 4 x 3 x 3.5 cm. in the angle of the tracheal bifurcation. The esophagus was adherent to the posterior surface of this latter mass for a distance of 2.3 cm., where it was slightly compressed. The masses contained thick mucinous material. The upper mass extended through the tracheal wall and the lower mass protruded into, and largely obstructed, the lumina of both main bronchi.

Sections of the cyst-like masses and smears of the mucinous material from the bronchi contained many encapsulated organisms characteristic of Cryptococcus neoformans (Torula histolytica). There were additional lesions of cryptococcosis in sections from several different areas of each lung. Areas of silicosis were also demonstrated in sections, but no tuberculosis was found. Sections of the liver, spleen, adrenals,

* Read before the Section on Pathology and Bacteriology at the Seventy-fifth Annual Session of the California Medical Association, Los Angeles, May 7-10, 1946.

pancreas and kidneys contained no lesions of cryptococcosis.

The head was not opened for examination of the brain because of the absence of central nervous system symptoms.

COMMENT

The organisms (Cryptococcus neoformans) were numerous and easily demonstrated in the tracheal and bronchial mucinous material by direct wet smears mixed with a small amount of India ink. By this method the mucinous capsules of the organisms with their included centrally located yeast-like bodies could be clearly seen. It seems from this fact that a similar examination of the sputum should have made an earlier diagnosis possible.

The organisms were present in the sections of the small biopsy specimen stained with hematoxylin and eosin and were noted as round bodies within the net-like spaces of what was at first diagnosed by the author as a polyp. It was not until the sections from the autopsy material were examined that the true cause of the lesions became evident.

The additional interesting feature of this case is that death was undoubtedly the result of asphyxia produced by the blockage of the trachea and bronchi with mucinous capsular material produced by the Cryptococcus neoformans.

In conclusion, there are three splendid reviews of the subject "Cryptococcosis" in which will be found excellent bibliographies:

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MEDICAL PROGRESS:

Treatment of the Anemias

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THE recent advent of folic acid as a possible substitute for liver extract in the treatment of pernicious anemia and other megaloblastic anemias has made it worthwhile to review the subject of the therapy of the anemias in general and to evaluate recent modifications of methods of therapy. No attempt will be made to discuss the agents which have been found useful in the treatment of leukemia and tumors involving the hematopoetic and lymphatic tissue. We are concerned primarily with the measures which have been shown to be of value in relieving anemia directly by increasing the production of red blood cells, by slowing accelerated destruction or by replacing deficient formation with transfusions.

In a current review of the literature Cartwright[4] has summarized present knowledge of the dietary factors concerned with red cell formation in animals and man. While there is no incontrovertible evidence that deficiency of any one of the known vitamins, including members of the B complex, is responsible for the development of anemia in man, it is well recognized that a diet adequate in protein and vitamins provides the necessary background for optimum treatment of anemia by more specific measures. Inadequate intake or inadequate absorption of the extrinsic factor of Castle, which at present remains unidentified, is responsible for a variety of nutritional macrocytic anemias throughout the world but the occurrence of macrocytic anemia on the basis of deficient intake of foods containing the extrinsic factor is uncommon in this country.

CLASSIFICATION OF ANEMIAS

The morphologic classification devised by Wintrobe[37] provides the most useful basis for a broad concept of the anemias since the changes which occur in mean corpuscular volume and hemoglobin content and hemoglobin concentration as anemia develops are closely related to etiology and hence to treatment. The diagnosis of anemia depends on the accuracy of estimation of the three basic determinations, namely, the mean corpuscular values as derived from the hematocrit, the hemoglobin determined in grams per 100 cc., and the erythrocite count.

In addition to the determination of the mean corpuscular values, some measurement of the rate of blood formation should always be included in the differential diagnosis of anemia. The rate of blood formation is best measured by a reticulocyte count, but a study of the number of polychromotophilic cells in the ordinary Wright's stained preparation will frequently suffice to indicate whether red cell formation is increased or decreased. Variations in size and shape of the red cells and abnormalities of the leukocytes and platelets provide important leads to diagnosis of the type or cause of the anemia, and it is unfortunate that the physician has largely abandoned this part of the examination.

The diagnosis of anemia begins with the history and physical examination but in most cases the final conclusion will be reached by accurate examination of the abnormalities of the peripheral blood.

MACROCYTIC ANEMIA

In this group the mean corpuscular volume shows a progressive increase as the anemia develops and while the individual cell, being larger, contains more hemoglobin per cell the concentration of hemoglobin in the red cell tissue remains normal. Pernicious anemia, which is characterized by certain clinical and hematological features is the classical example of this group but the macrocytic anemia of sprue, nutritional macrocytic anemia and the megaloblastic anemia of children and infants are all variations which have in common the megaloblastic changes in the bone marrow.

There is unanimous agreement that refined liver extract (15 U.S.P. units per cc.) is as effective in controlling pernicious anemia as crude liver extract (1 or 2 U.S.P. units per cc.).[14,16,33,34] Complete relief of the anemia and gastrointestinal symptoms and glossitis is the rule. The treatment of neural lesions has been more difficult to evaluate but the results have been uniformly good in typical cases and there is little evidence that crude liver extract and additional B complex vitamins[38] produce further improvement following optimal treatment with refined liver. There is also general agreement that liver therapy should be administered by intramuscular injection. The oral route is unsatisfactory because some patients fail when receiving the treatment by mouth, to obtain control of the anemia and neural lesions. About 60 times as much liver is required for adequate oral therapy so this method is also less desirable from the standpoint of economy of liver factor. It is also easy for the patient who is receiving oral treatment to discontinue the medication and go into relapse.

The intramuscular injection of 1 or 2 cc. of liver extract (15 to 30 U.S.P. units) every three or four weeks provides optimum treatment for all but the occasional patient. In the published series no patient has required more than this amount to control the neural lesions and the results of giving larger doses

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have been equivocal. The patient may be taught to take the treatment at home but this is less desirable than a regular visit to the doctor's office. The interval between injections should be reduced in the presence of acute infections or in chronic illness of any type, since the need of liver factor is increased. In the presence of neural symptoms the peripheral blood is not a guide to adequate maintenance therapy since several times as much liver extract may be required to prevent progression of spinal cord degeneration as is necessary to maintain a normal hemoglobin level. Improvement and control of neural symptoms and signs rather than the blood count is the guide to adequate therapy when neural lesions are present.

In the treatment of pernicious anemia in relapse we have followed the principle advocated by Askey [2] of giving a large total dose of 100 to 200 U.S.P. units during the first week of therapy. Theoretically this large initial dose is needed to fill the depleted stores of liver factor. In administering liver extract to patients with pernicious anemia in relapse the physician has the responsibility of confirming the diagnosis by following the response to therapy so the patient may be told with certainty that liver injections must be taken at intervals for the rest of his life.

To supplant liver extract in the treatment of pernicious anemia a new agent must be as effective and provide the advantage of the oral route. Although many observers have demonstrated that folic acid will initiate a hematologic remission in pernicious anemia and other macrocytic anemias with megaloblastic changes in the bone marrow,[9, 29, 31, 36] it is evident that treatment with folic acid alone will not restore the hemoglobin and red cell count to a normal level in many patients with pernicious anema.[1, 19, 28] It also appears certain that folic acid does not control or improve the neural lesions, and neural lesions may appear first and progress rapidly during maintenance therapy with folic acid.[10, 23, 32] These observations are certainly contraindications for the routine use of folic acid in treatment of pernicious anemia and there will probably be few instances in which it will be shown to be a useful adjunct to liver extract.

It appears that folic acid may be the most effective agent yet used in the treatment of the macrocytic anemia and other manifestations of the sprue syndrome [8, 25] although more studies are necessary for final evaluation. Macrocytic anemia with megaloblastic changes in the marrow which fail to respond to injections of refined liver extract have been reported. These patients exhibit free hydrochloric acid and an absence of steatorrhea. A background of nutritional deficiency is common and the association of pregnancy is frequent. After failure to respond to injections of refined liver these patients have responded to whole liver, proteolyzed liver, and folic acid by mouth.[11, 12, 35] Some have responded to large doses of crude liver intramuscularly.

Of considerable interest and importance are the reports of macrocytic anemia in infancy and childhood which are associated with megaloblastic changes in the marrow.[13, 39] Those occurring in infancy have been shown to respond to liver extract and to folic acid. Those occurring in childhood were refractory to refined liver extract but have responded to proteolyzed liver by mouth. A patient with macrocytic anemia and megaloblastic changes in the marrow who fails to respond to injections of refined liver should be given folic acid, oral liver preparations and large doses of crude liver intramuscularly before it is decided that the anemia is refractory to therapy.

Sensitivity reactions of all types and degrees of severity have been observed in a small percentage of people taking intramuscular liver extract.[17, 24, 27] It is agreed that the sensitization is developed for the antianemic principle and is not dependent on organ or species protein. If the manifestations are mild smaller injections at frequent intervals with concomitant use of adrenalin will usually suffice for control of symptoms. If the reactions are severe desensitization with gradually increasing doses of liver extract will usually be successful. The desensitized state will usually be maintained by giving the regular maintenance injection at intervals not greater than seven to fourteen days. In view of the unsatisfactory nature of oral therapy and the danger of neural relapse with folic acid, a concerted attempt should be made to secure desensitization before treatment of pernicious anemia with intramuscular liver is abandoned.

In spite of evidence of a higher incidence of carcinoma of the stomach in patients with pernicious anemia, we have not advocated frequent gastrointestinal examinations. In this clinic three patients out of 35 have developed carcinoma of the stomach in five years, which is a high incidence, but the ages of the patients were 72, 78 and 84 years, and due to a variety of factors it is almost certain that these three patients would not have submitted to a periodic fluoroscopic examination. We have not prescribed hydrochloric acid as a routine measure since few patients have complained of gastrointestinal symptoms and no benefit has been noted in its use of those patients who have had dyspepsia.

MICROCYTIC HYPOCHROMIC ANEMIA

When a state of iron deficiency develops from any cause the size of the average red cell usually is diminished and, more important as a diagnostic criterion, the concentration of hemoglobin in the red cell tissue as expressed by the mean corpuscular hemoglobin concentration (M.C.H.C.) falls below the normal optimum level. The discovery of a true hypochromic anemia, that is one in which the M.C.H.C. is low, always calls for an explanation, particularly in the adult male, since chronic blood loss from an otherwise silent gastrointestinal lesion may be the cause. Aside from chronic blood loss, growth and the demands of pregnancy are the most important factors in the production of iron deficiency. A diet inadequate in iron is frequently a contributing factor in iron deficiency but is seldom if ever the sole cause.

There is general agreement as to the effectiveness of oral iron medication in the treatment of hypochromic anemia.[21] Iron should be given in the fer-

rous state as either ferrous sulfate or ferrous gluconate, and 0.2 gm. to 0.4 gm. three times daily with meals will provide adequate treatment. Since unpleasant gastrointestinal symptoms result from iron therapy in a minority of patients it is well to begin with the small dose. Ferrous gluconate is reported to be better tolerated than ferrous sulfate.[30] Sometimes it is necessary to omit iron with the lightest meal of the day in order to avoid discomfort. A reticulocyte response and a steady rise in hemoglobin during the first few weeks should follow the administration of iron by mouth.

If it is necessary to repair iron deficiency anemia rapidly or if iron therapy cannot be tolerated by mouth the transfusion of whole blood or concentrated cells is the treatment of choice since the iron introduced as hemoglobin can be reutilized in blood formation. Other forms of parenteral iron therapy are unnecessary and not satisfactory because the amount of iron that can be given without production of toxic symptoms is small.[18,22] The addition of liver and vitamins to oral iron preparations is unnecessary and only adds to the cost of the medication. Borderline iron deficiency anemia is probably the most common deficiency state because of chronic blood loss (menstruation) and pregnancy, plus the factor of low iron content of the average diet. The frequent use of iron tablets which are inexpensive has more to recommend it than the popular use of expensive vitamin preparations.

In connection with the discussion of iron therapy it is well to remember that the color index is not a guide to presence of iron deficiency since the color index is low in the simple microcytic anemias which are commonly associated with infections and are not due to lack of iron and do not respond to iron medication. Anemias in which the color index is low should not be expected to respond to iron unless the concentration of hemoglobin in the red cell tissue, M.C.H.C. is also shown to be below normal. The only anemia in which the M.C.H.C. is low which does not respond to iron therapy is Mediterranean anemia, a heredo-familial disorder not associated with the causes of iron deficiency.

NORMOCYTIC NORMOCHROMIC ANEMIAS

A normocytic anemia is characterized by a simple reduction in the number of circulating red cells without much variation from normal of mean cell size or of hemoglobin concentration. The anemias of acute blood loss and increased blood destruction are typically normocytic and normochromic but are usually recognized by characteristic clinical manifestations. The remaining causes produce a normocytic anemia by decreased blood formation.

1. Chronic inflammatory processes.
2. Chronic nitrogen retention.
3. Refractory anemias (aplastics, etc.) due to chemical or physical injury of the marrow or to causes unknown.
4. Invasion of the marrow by tumor tissue.

As is readily seen the discovery of a normocytic normochromic anemia in the absence of acute blood loss or increased blood destruction is usually of serious import to the patient since many of the disease processes which produce an anemia of this type are irreversible. The anemia responds only to the removal of the cause and is not affected by iron, liver or folic acid medication. Chronic infection may be overcome or irradicated but chronic nitrogen retention which is always associated with some degree of anemia can seldom be relieved.

A bone marrow depressed by exposure to toxic substances may begin to regenerate erythrocytes, leukocytes and platelets in a normal manner after a period of months or years but recovery is not usual. As emphasized by Bomford and Rhoads[3] the patient with refractory anemia should avoid exposure to aromatic compounds. A diet high in B complex vitamins augmented by brewer's yeast by mouth and injections of crude liver extract should be given as supportive therapy. Transfusions of whole blood or concentrated red cells present the only immediate effective way of combatting the anemia and should be used as needed. Many patients with so-called aplastic anemia have made an eventual recovery after months or years of being sustained by transfused blood.

Studies of the longevity of transfused red cells by several methods show that the average red cell lives about 120 days so that 50 per cent of transfused blood should be present at the end of 50 to 60 days providing the cells have not been stored too long before use or that the patient has not built up an atypical isoagglutinin such as anti-Rh or Hr antibodies. Patients who are receiving repeated transfusions should be given only Rh negative blood if they are Rh negative and should be watched for the signs of increased blood destruction such as a rise in the icterus index to prevent futile transfusions and to avoid the danger of severe hemolytic reactions. Repeated transfusions also seem to produce a susceptibility to febrile reactions which are not hemolytic in origin. In my experience such reactions may be kept at a minimum by using freshly drawn citrated blood instead of stored blood, and by using donors who have fasted for at least 12 hours.

SIMPLE MICROCYTIC ANEMIA

This type of anemia, commonly seen in association with a chronic inflammatory process, deserves a special place in the morphological classification because it may be confused with iron deficiency anemia since the color index is low. Because the mean cell volume is below normal there is less hemoglobin per cell, but the concentration of hemoglobin in the red cell tissue (M.C.H.C.) is normal, indicating an absence of deficiency of hemoglobin. The simple microcytic anemias should be distinguished from the microcytic hypochromic anemias since they do not respond to iron therapy and are due to an entirely different process.

Cartwright[5] and his co-workers have recently thrown new light on the pathological physiology of the anemias associated with chronic infection. The

anemia is normocytic at first and then becomes microcytic, but in no instance has it been observed to be macrocytic or hypochromic. The level of plasma iron was found to be low in all of 16 cases studied and when iron was administered the absorption curve was flat as in hypochromic anemia, but there was no reticulocyte response or rise in hemoglobin level as follows iron therapy in hypochromic anemia. It appears that iron is removed from the plasma and utilized or absorbed in inflammatory tissue and is not available for the formation of blood.

The simple microcytic anemias do not respond to iron or liver therapy and improvement cannot be expected until the chronic inflammatory process has been improved or eliminated. Usually the hemoglobin level does not fall so low as to require transfusion because of oxygen want although transfusions are frequently given as part of general supportive therapy.

HEMOLYTIC ANEMIAS

Anemias due to accelerated blood destruction usually show mean corpuscular values close to normal but are easily distinguished from other anemias by the signs of increased blood destruction and increased blood formation. During the past decade investigation has confirmed some old concepts of two common varieties of hemolytic anemia. It is now evident that familial hemolytic jaundice and acquired hemolytic anemia are fundamentally different in etiology and are not variations of the same disease process. There is now good evidence that the defect in congenital hemolytic jaundice lies in faulty structure of the cell while in acquired hemolytic anemia with spherocytosis the accelerated hemolysis is due to the production of an immune body type of hemolysin.[6,26,15] Splenectomy is the only effective treatment in both conditions although the operation frequently does not produce a complete or permanent remission in acquired hemolytic anemia. In our own experience splenectomy has produced a complete clinical remission in all cases of congenital hemolytic jaundice, which is in keeping with the reports of others.

Of eleven patients with acquired hemolytic anemia studied here only one has made a spontaneous recovery. The accelerated hemolysis in this 16 year old girl was associated with a right middle lobe pneumonia and a high titer of cold agglutinins. The rate of blood destruction fell to normal as the signs of infection cleared. One patient died without splenectomy because the hemolytic process was so severe that there seemed to be no opportunity to carry out the operation before death. Of nine patients who have undergone splenectomy after a period of observation, only one showed no benefit, five have shown varying degrees of improvement but still exhibit some anemia with evidence of increased hemolysis. Three patients have shown clinical cures for over two years but one of these relapsed and died of hemolytic anemia following the resumption of gold therapy for arthritis. It is evident that the response to splenectomy is variable in acquired hemolytic anemia, but in the majority of cases it is the only treatment which is effective and should not be delayed beyond a few days of observation since spontaneous recovery is unusual.

Recovery from acquired hemolytic anemia following the removal of an ovarian tumor has been reported and it appears that a variety of agents, infection, tumor or medication may furnish the antigenic stimulus for hemolysin production. In our experience the onset of acquired hemolytic anemia in most cases has appeared to be spontaneous and not associated with recognized exposure to external agents or with internal diseases.

We have not hesitated to use transfusions of whole blood or concentrated red cells when needed in all forms of hemolytic anemia. By and large, multiple transfusions have been well tolerated by patients with a variety of hemolytic anemias and in many instances have been life saving by permitting operation for splenectomy in patients with acquired hemolytic anemia. One patient with acquired hemolytic anemia died in uremia following multiple transfusions but here the situation was complicated by the presence of an atypical isoantibody which was evidently different from the hemolytic antibody. In giving multiple transfusions to patients with hemolytic anemia the usual precautions such as Rh typing should be used and the cross matching of blood should be carried out at 37° C. in a test tube to detect the presence of other atypical antibodies. Splenectomy should be done even in desperate cases if there is no improvement after several transfusions. Since the transfused cells become involved in the hemolytic process in acquired hemolytic anemia the benefit of transfusion is very transitory.

We have observed hemolytic crises following transfusions in patients with congenital hemolytic jaundice and paroxysmal nocturnal hemoglobinuria. The patient with congenital hemolytic jaundice had a lower red count two days after transfusion than before and splenectomy was carried out successfully without further transfusion. The patient with nocturnal hemoglobinemia exhibited a hemolytic crisis with hemoglobinuria following the first transfusion, but since then has been treated with multiple transfusions of concentrated cells for a period of over two years with no further hemolytic reactions. Since the defect which produces the accelerated blood destruction in this disease lies in the red cells of the patient,[20] transfused cells have a normal longevity so transfusions are much more effective than in acquired hemolytic anemia.[7] The rate of blood destruction is actually diminished as the patients' cells are replaced by normal transfused cells. The same phenomena have been observed in sickle cell anemia in which the defect is in the patient's cells. Hemolytic activity as measured by the icterus index and fecal urobilinogen, diminished as the hemoglobin level was brought up to normal by transfusion and the production of defective cells in the patient's marrow was reduced. In general, the maintenance treatment of chronic hemolytic anemia with transfusions is

difficult if not impossible unless unlimited amounts of concentrated cells are available, so that cells from four or five pints of blood can be given in the course of two or three days.

SUMMARY

It is evident in the foregoing discussion that the treatment of anemia is specific and that the agents used should depend on the type of anemia encountered. The administrations of liver extract is specific for pernicious anemia and other megaloblastic anemias, but it is without effect on red cell production in other types of anemia. Iron therapy is all that is needed in hypochromic microcytic anemias but it is of no value when iron deficiency does not exist. Preparations containing iron, liver, folic acid, and other ingredients are expensive and cannot be recommended as effieient therapeutic agents. The use of such mixtures without proper diagnosis is to be condemned since if iron deficiency is present the patient should be investigated for a source of blood loss and if liver factor is needed the patient probably has pernicious anemia, and should plan to take therapy for the rest of his life. Patients who have normocytic or simple microcytic anemias should be investigated to determine if the cause is reversible or not. Iron and liver therapy should be given to patients with normocytic anemias at separate intervals but a lack of response in such instances should not be considered a reflection on the effectiveness of these therapeutic agents. It appears now that folic acid should be used in the treatment of sprue and further controlled observation of its effect on various disorders of blood formation is desirable. Folic acid should not replace intramuscular liver extract in the treatment of pernicious anemia.

Transfusions offer the only effective method in the treatment of normocytic anemias due to decreased blood formation unless the underlying cause can be removed. When concentrated red cells are available multiple transfusion offers the most effective form of therapy. Splenectomy is indicated in congenital hemolytic jaundice and acquired hemolytic anemia. No rule can be made as to when splenectomy should be done in patients with acquired hemolytic anemia and is a difficult decision to make if the patient is desperately sick. Spontaneous recovery is rare and splenectomy should not be delayed beyond several days in most patients. Multiple red cell transfusions may be used in all types of hemolytic anemia and maintenance therapy with transfusions is possible if necessary in paroxysmal nocturnal hemoglobinuria.

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California Cancer Commission Studies*
Chapter IV

Biopsy — Indications, Technic and Safeguards

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THE acceptance and desirability of biopsy are so well established today that it may be said that biopsy should be done in every case of malignant tumor or where malignancy is in doubt, unless there is particular contraindication. By biopsy is meant the removal of tissue from a lesion on a living patient for microscopic examination and diagnosis. This includes the removal of entire nodules, such as a lymph node or nodes, a nodule from the breast, or a growth in the skin or connective tissue with surrounding normal tissue. The clinical diagnosis of neoplastic disease is only the impression of the examining physician. The final diagnosis, and commonly the planning of a rational program of treatment, must be based on the microscopic examination of tissue from the growth. This final proof is also needed for record and research.

Biopsy is of greatest use in early malignancies or small lesions, and of least value in large fungating lesions of the breast, skin, or lip, for example; but even in most of these late lesions valuable information as to the type and degree of malignancy is obtained by microscopic studies. Valid statistics as to the outcome or results of various types of treatment on various types or grades of cancer can be obtained by no other method, except autopsy studies. It is no reflection on the ability of a physician if he tells a patient with a suspicious lump or ulcer: "I do not know whether this is cancer or not. I must take a piece of tissue for microscopic study." Rather it is an acknowledgment that the physician chooses to use the best method available to obtain a proper diagnosis.

Some physicians refrain from doing biopsies because of fear of disseminating the tumor cells or stimulating their growth. Innumerable experiments and decades of clinical experience have shown that when biopsy is properly done there is very little danger of this in the vast majority of tumors. In the best clinics throughout the world biopsy of accessible tumors has been done practically routinely for years, and each year it is done more extensively.

As a general surgical principle it is better to remove most tumors completely with surrounding normal tissue, if feasible. *Pigmented nevi or melanomas should always be very widely removed and never cut into.* Likewise, it is poor surgical practice to cut into a tumor with skin tightly drawn over the surface, lest non-healing and the production of a malignant ulcer result. In cases of blood vascular tumors care should be taken not to cut into the lesion. Rather, the cut should be wide of the lesion and through normal tissue. If a lesion is accessible and small, such as a cancer of the skin of the face or a small subcutaneous mass or a nodule in the breast, the entire lesion with a zone of surrounding normal tissue should be removed. This then becomes the biopsy specimen. Small basal cell carcinomas of the skin can be entirely eradicated by this radical biopsy, and the pathologist should make multiple sections through the narrowest axis of the tissue submitted in order to determine microscopically if there has been complete removal of the tumor. Small nodules in the breast should be removed completely, with surrounding uninvolved tissue. This should be done only in a hospital where frozen section examination of the tumor may be made promptly. For large masses, biopsy is best performed by removal of a small piece of the tumor rather than by complete excision. Certainly the trauma of a properly made surgical incision entails little or no more risk than rough and repeated palpation of a tumor by the patient, anxious relative, or physician. The value of the information obtained far outweighs the dangers, just as the value of sulphonamide drugs in treatment of various infections outweighs the toxic effects of the drugs.

If conditions are such that at the time of biopsy the entire lesion cannot be excised, great care must be taken to remove a satisfactory specimen. All too often a pathologist receives only a portion of a thick crust or of necrotic tissue from the surface of a lesion, usually taken by one inexperienced in this procedure. A portion from the border of the lesion but still within its substance should be removed. The specimen should be deep enough to include the vascular supporting tissue beneath the tumor, and wide enough to include some of the uninvolved mucosa or skin so that the pathologist may determine the changes going on at the margin between the neoplasm and the non-involved tissue.

If mechanically possible, papillomatous growths should be entirely removed, so that changes at the base can be properly studied. This is particularly true of rectal or sigmoidal polyps and of papillomatous lesions of the skin.

The surgeon is sometimes tempted, in obtaining a lymph node from an area in which several nodes are involved, to remove a small, easily movable node at the periphery of the involved group. In some cases this specimen may show changes characteristic of the disease process present in all the nodes, but in many cases only simple lymphoid hyperplasia is seen and the biopsy has been in vain. A node which is obviously involved should be selected.

* Organized by the Editorial Committee of the California Cancer Commission.

METHOD OF BIOPSY

The best instrument for obtaining most biopsies is a scalpel. It should be used with *the least amount of trauma to the tissue.* The practice of seizing the piece of tissue with a pair of forceps and cutting around it defeats the purpose of the biopsy, since squeezing breaks the tumor cells. Then all that can be seen in the microscopic slide is chromatin from ruptured cells strewn throughout the supporting stroma, or cells practically disrupted and the architecture so distorted that recognition of tumor is impossible. If forceps must be used at all, the bite should be made at the extreme edge of the tissue. Criticism can also be levelled at the procedure of obtaining tissue by cautery. Since several millimeters of tissue are cooked by this procedure, all except large biopsies are ruined by the cellular dissolution resulting from the heat. It would seem best, if it is deemed wise to use cautery, to take the biopsy specimen with a knife and then cauterize the base.

ARMAMENTARIUM

For the usual biopsy all you need is either

—a scalpel or
—a sharp punch
—a 10 cc. luer and 16 gauge needle.

In less accessible areas such as the upper rectum, nose, larynx, or bronchus, suitable biopsies can be obtained only by biting forceps or punches, which must be sharp to avoid crushing or tearing the specimen. If the thought is entertained by the physician and pathologist that the patient's life depends on a properly made tissue examination, greater care would be taken by them to insure a proper diagnosis.

Diagnostic curettage of the uterus is frequently poorly done. Use of too large a curet through an incompletely dilated cervix should be avoided because the curettings are chopped to pieces by multiple short strokes and crushed beyond recognition by pressure between the curet and the rigid cervix. Care must be taken to avoid crushing on the gauze used to wipe the pieces from the vagina. The art of the trained gynecologist, who gently removes strips of tissue or solid, unsqueezed chunks, should be emulated.

In rare instances, in tumors inaccessible to direct attack, aspiration biopsy may be used. This procedure has certain hazards and there are difficulties in the interpretation of the specimen. It should be done only by one trained in the method and the specimen should be diagnosed only by a pathologist with long experience in this field.

Frequently information as to the presence of tumor may be obtained by examination of fluid aspirated from the chest or abdomen. Fifty to seventy per cent of fluids secondary to neoplasm should show recognizable tumor cells if sufficient fluid is obtained and proper study done by a trained pathologist. At least eight to twenty-four ounces of fluid should be submitted, free from anticoagulant, promptly after removing, so that degenerative changes and necrosis of the tumor cells do not occur before examination is made. Smears of the sediment and sections of the centrifuged sediment and fibrin clot after imbedding in paraffin should be carefully studied.

Biopsy of the sternum by a small trephine followed by curetting of the sternal marrow with a small bone curet is particularly valuable in the diagnosis of multiple myeloma or aleukemic leukemia. The use of this procedure in most blood dyscrasias is of academic interest and is not necessary except in problem cases.

Biopsy of suspected lesions in the abdominal cavity is satisfactorily done through a peritoneoscope by those with long experience with this instrument.

Biopsies of bone tumors must be taken through normal tissues. Usually the specimens are not suitable for a frozen section diagnosis because they must be decalcified. The wounds through which biopsies are taken must be closed without drainage.

FIXATION OF TISSUES

In office practice, an infallible rule should be that *before any biopsy is done a suitable container and fixing fluid should be at hand.* Arrangements should be made ahead of time with a pathologist to furnish a supply of bottles and fluid. Tissue should be placed immediately into the fixative so that autolysis with loss of structural detail will not occur. The fluid volume should be about ten times the volume of the tissue specimen. The best routine for small pieces such as skin, cervix, etc., if the specimen does not have to be mailed, is Zenker's solution, containing mercuric chloride and potassium dichromate, but without the acetic acid called for in the official formula. [Mix: potassium dichromate, 2.5 gm.; mercuric chloride, 5.0 gm.; sodium sulfate, 1.0 gm.; water, 100 cc.] Small pieces of tissue are readily fixed in a few hours or over night, but tissues should not be left in this solution over 24 to 36 hours. A worthwhile procedure is to place small pieces of tissue on a square of blotting paper which may then be dropped into the fixative. Larger pieces, which require considerable gross examination and sectioning by the pathologist before he takes representative pieces for microscopic examination, and smaller pieces which must be left in solution over 36 hours before receipt by the pathologist, should be placed immediately in 10 per cent formalin, (4 per cent formaldehyde) made by diluting formalin (40 per cent formaldehyde) with nine parts of water or normal saline. In no circumstances should the speci-

FIXATIVE SOLUTIONS

10 per cent Formalin **Dilute formalin (40 per cent formaldehyde) with nine parts water. Best for large specimens or if they are to be mailed to pathologist.**

or *Zenker's Solution* (without the acetic acid). Best for small pieces when pathologist gets them promptly.

men be allowed to dry; but if this does happen by error, tissue can be resurrected by soaking it in normal saline for about 30 minutes, followed by fixation in one of the previously mentioned fluids. The specimen should not be placed in water, for that causes swelling and distortion of the cells without fixation of the cells. In the resulting necrosis of tissue, detail is entirely lost. Alcohol is a very poor substitute for Zenker's fluid or formalin. It fixes poorly and it causes too much hardening of the tissue as well as marked shrinkage of cells and stroma.

CLINICAL EXAMINATION

Adequate clinical information should accompany the tissue submitted, in order that the pathologist may weigh properly the evidence disclosed by the gross and microscopic examinations of the specimen. Ewing, who owed much of his ability as a master tissue diagnostician to his ability to correlate what he saw in the tissue with the clinical facts in the case, insisted at all times on clinical information. A minimum should be: the age and clinical history of the patient, the location of the lesion, its size and appearance, and the possible diagnosis. Far too often the pathologist receives a bit of tissue with only the name of the patient, often badly written at that, and no other data on which to begin. Pathology has not reached and never will reach the stage where diagnosis can be made in such circumstances. As an example, great difficulty has been encountered in recent years in the interpretation of uterine curettings because of the common usage of estrogenic substances in the treatment of menopausal disorders. In some cases the hyperplastic changes produced simulate carcinoma very closely, so that grave errors may occur unless the pathologist is informed of the estrogenic treatment. Information as to this type of treatment should be submitted with curettings.

FROZEN SECTION

In only a few clinics or hospitals is frozen section routinely done on surgical and biopsy specimens. The vast majority of tissue diagnoses throughout the country are made on paraffin sections, since nearly all pathologists find these more satisfactory. Rapid frozen section is of utmost importance when the patient is on the operating table and further operative procedure is dependent upon the microscopic diagnosis. This is especially true in breast and soft tissue tumors. However, probably most pathologists of long experience have had occasion, upon examining permanent paraffin sections, to revise diagnoses which they had made earlier on the basis of rapid frozen sections. Many an error is made on uterine curettings or other small bits of tissue, in an endeavor to report frozen section diagnoses within a few minutes. It is important, therefore, that a pathologist making a frozen section set aside enough of the specimen to imbed in paraffin later. By use of the Technicon or other rapid imbedding processes, paraffin slides are prepared within 24 hours in most laboratories, and in less time when special service is necessary.

GRADING OF NEOPLASMS

For years, pathologists have classified tumors of low, moderate or high degree malignancy on the basis of cell structure, organization of the tumor, variation in size and shape of the cells, chromatin content of nuclei, presence of mitoses and other factors. In this country Broder's numerical classification has been widely accepted and serves a useful purpose as a standard of grading, if allowance is made for some variation between the figures of various observers. Grade I, in which the cells are well differentiated and resemble closely the mother type, represents the lowest grade of malignancy. Grade IV is the most malignant type. In tumors of this grade, marked anaplasia and evidence of active growth is present, with complete or nearly complete lack of differentiation. In many cases in tumors of this grade it is impossible to determine whether a cancer is of squamous or glandular origin, since the cells are so anaplastic that they do not show characteristics of the cells from which they arise. Grades II and III occupy positions in between these extremes, and in these groups the vast majority of carcinomas fall. Some pessimistic pathologists are apt to call an adenomatous polyp of the colon or a papillary tumor of the bladder a Grade I carcinoma, whereas in the opinion of others these would be considered benign. For this reason some clinics report more cures of cancer than others. If one notes what happens to the cases in Grades II, III and IV in comparable reports, a more reasonable estimate of efficacy of treatment can be obtained. Grading of sarcomas, melanomas and malignancies other than carcinoma is much more difficult and the older, non-numerical classification of low, moderate, or high degree of malignancy is most commonly used.

SUMMARY

The fate of a patient and the choice of methods of treatment depend largely on what is done when the patient is first seen. If a biopsy is done it should be done after careful planning. Adequate tissue obtained by proper instruments should be removed. If the tissue is not removed in a hospital with a pathologist on duty, it should be promptly fixed in suitable solution and promptly sent to the pathologist along with sufficient clinical information to guide him in arriving at a correct microscopic diagnosis. Teamwork of this type will certainly pay dividends in making more accurate diagnoses and in saving lives.

Biopsy all tumors unless there are definite contraindications.

Plan **the biopsy carefully.**
Teamwork **with pathologist essential.**

(a) Get adequate, representative tissue.
(b) Don't squeeze, shred or burn it.
(c) Fix tissue properly and promptly.
(d) Supply a good clinical history. Repeat biopsies if necessary.

Chapter V, Radiation Therapy of Cancer, by R. R. Newell, M.D., will appear in this section in the September issue.

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EDITORIALS

Current Trends in Research on Eclampsia

In dealing with eclampsia, a serious disease of unknown etiology, it seems proper to pause occasionally and to take stock of the direction in which current research efforts lead us. This is especially true when therapeutic implications are involved. There are four lines of investigation which deserve careful attention: (1) alterations of renal function leading to edema, (2) methods of protecting the liver against damage, (3) the cause and prevention of the convulsions, and (4) the role of the placenta in causing generalized vascular damage and multiple small thromboses.

The newer methods of investigating renal blood flow and glomerular filtration rates indicate that in preeclampsia and eclampsia there is not a renal "ischemia," but rather a slight increase in the rate of blood flow. The filtration of urine, on the other hand, is definitely impaired. The cause of this may be related to the diffuse thickening of the glomerular (filtering) membrane observed histologically. The only means that the body has of increasing the amount of urine formed, and thus preventing anuria, is either by raising the head of pressure within the glomerulus or by reducing the osmotic pressure of the blood. Thus the hypertension and the hypoalbuminemia associated with eclampsia may be compensatory mechanisms in some way effected by the kidneys in order to prevent such a catastrophe. Attempts to lower the blood pressure with drugs which further reduce the formation of urine (as with nitrates, veratrum viride, etc.) may be unwise. *The net effect of the reduced filtration rate associated with eclampsia is to increase the amount of sodium chloride (and water) obligatorily reabsorbed by the proximal tubules*, and this now appears to be one of the primary causes of the edema. Such a suggestion substantiates the well-known clinical observation that improvement of preeclampsia rarely occurs until diuresis is established. We should redouble our efforts to promote the excretion of salt and water by the rigid restriction of sodium intake, the displacement of sodium by the judicious use of such salts as ammonium chloride, and by supplying sufficient water to prevent undue concentration of the urine. The latter is satisfactorily done by the administration of dextrose in distilled water by vein.

Current researches dealing with protection of the liver against toxic damage stress the desirability of such lipotropic factors as methionine, choline, lipocaic and inositol, in addition to the usual therapy with carbohydrates. Protein digests containing methionine would have the advantage of allowing the synthesis of protein, much needed in eclampsia, and could be administered orally or even by intubation if necessary. To date, there are no reports on the value of such materials in eclampsia, nor is there a commercial protein digest available which is sufficiently low in sodium (though one may soon be marketed). *The administration of essential amino acids and choline to patients with severe preeclampsia or eclampsia may become a valuable adjunct to our therapy.*

We call now upon the encephalographers who inform us that about ten per cent of the population at large have cerebral dysrhythmia; that these are the individuals who are most subject to epilepsy or to post-traumatic convulsions; and that two-thirds of women who give a history of eclampsia (instead of the expected ten per cent) have such abnormal brain wave patterns. *Inasmuch as about 10 per cent of women with preeclampsia develop convulsions, it is possible that these individuals are the unfortunate ones genetically endowed with cerebral dysrhythmia.* This obviously suggests that the administration of an anticonvulsant drug more potent than the barbiturates (such as sodium 5, 5-diphenyl hydantoinate

Dilantin) in all cases of non-convulsive toxemias early in the course of the disease may lower the incidence of actual eclampsia. It may be years, of course, before we obtain the report on a series of cases sufficiently large to be of significance.

Lastly we come back to a theory of Dienst's in 1912, the work of Obata in 1919, and the recent repetition of Obata's work by Schneider showing that the principle of the human placenta which is lethal to animals upon intravenous injection is thromboplastin. Human serum contains an "antithromboplastin," and we recall that Obata, and later Dieckmann, found that women with preeclampsia and eclampsia have a reduced amount of this inhibitor substance in their serum. *The slow liberation of unopposed thrombokinase into the maternal circulation by the placenta* (one of the richest sources of this substance in the body)—*under some such stimulus perhaps, as "ischemia" of the gravid uterus—might allow a slow deposition of fibrin upon the intima of small blood vessels, cause capillary thromboses and periportal hepatic lesions, and thus account for at least some of the major pathologic changes of eclampsia.* For direct proof of this hypothesis, it remains to quantitate the amounts of circulating thromboplastin and its inhibitor in the plasma of eclamptic women. The biocatalyst, thrombokinase, is a molecule of such tremendous size that it might be expected to remain in the circulating blood for many days after delivery, thus accounting for the occurrence of continued damage in the immediate puerperium. An obvious specific "antidote" for thromboplastin is heparin, and the few cases in which it has been used warrant some enthusiasm for the future. The obvious dangers of heparinization of a pregnant or puerperal woman, on the other hand, should be sufficient to warn all practitioners against its use until the possible value of such therapy is well established by rigidly controlled clinical experiments in some research institution.

The A.M.A. Centennial

Celebration of the first century's existence of the American Medical Association was completed in Atlantic City in mid-June and from the scientific side of the event there seems little to be desired. Starting with an interdenominational religious service, carrying on through a galaxy of visiting dignitaries from all corners of the world, the meeting presented a series of scientific papers and scientific and technical exhibits which could easily rate top billing in any scientific gathering the world has yet seen. The planners and providers of such a program merit the respect and the thanks of the entire medical profession, not only in this country but in both hemispheres.

On the business side of the meeting, the side for which the California Medical Association regularly sends its delegates into action, there is room for both rejoicing and sorrow. On the happier side, California's Dr. Dwight H. Murray was elected to a full five-year term as a Trustee of the A.M.A. in a voting contest which favored the Napa physician by a four-to-one margin. This is ample evidence of respect for the character, capacity and sound judgment of our fellow practitioner, as well as for the integrity of the entire California profession. Other A.M.A. election returns tend to bear out this assay of the respect for sound, progressive policies which Californians have long espoused in national medical circles.

The reverse of the picture shows an unsettled state of public relations of the A.M.A., a condition aggravated by the unfortunate events leading up to the resignation of both the outside public relations counsel and the public relations expert employed as an executive assistant to the secretary-general manager of the Association. Further provocation on this score came from a renewed approval given by the House of Delegates to the National Physicians' Committee despite an evident disposition on the part of a large minority in the House for the A.M.A. to do its own job in the public relations field.

Out of these decisions, which in the democratic manner are binding on all members until and unless reversed, there comes one lesson which we hope will not be lost to sight. The important part of the entire public relations matter lies in the over-all problem and not in the personalities involved. The public relations counsel and expert have turned in their resignations; the public relations problem remains. No matter what events brought about these resignations, it is obvious that these individuals performed a valuable service during their terms with the A.M.A. and it is sincerely to be hoped that their contributions toward clearer and better public relations will not be discarded.

In the Rich report released last year and in the programs developed by the counsel firm and the public relations expert in the A.M.A. office, there are suggestions of value to American medicine. These should and must be utilized, salvaged from what might otherwise appear to be a useless wreck. Used objectively, they may well prove to be the beacon for guiding American medicine into paths of true public relations, true respect by and for the American public.

The rider may have come a cropper but that is no reason for shooting the horse.

CLINICAL CONFERENCE

Tetany in Postoperative Thyroid Cases

FROM THE STAFF ROUNDS OF THE MT. ZION HOSPITAL, SAN FRANCISCO, MARCH 7, 1947

DR. FRANKLIN I. HARRIS*: The subject that we are discussing today has been chosen because of the recent occurrence within one month of the two cases of tetany following thyroidectomy. Until this past month we had not seen a like case in this hospital for at least 15 years.

PRESENTATION OF FIRST CASE BY DR. KENNETH MOOSLIN, INTERN: The patient was a 25 year old white married female, who was admitted on February 1, 1947, for a thyroid operation. She had had a goiter for 12 years and in the two months prior to entry had developed symptoms of toxicity of it. On February 4 sub-total thyroidectomy was done. During surgery the four parathyroids were demonstrated. That evening the patient complained of tingling and numbness of the extremities, but Chvostek's and Trousseau's signs were negative. The symptoms continued; on the third postoperative day the patient showed a positive Chvostek's sign and the blood calcium was shown to be 6.8 mg. per cent (normal 9-11). She was placed on a regime which included calcium gluconate orally (2 gm. q.i.d.) and by vein (10 cc. of 10 per cent solution b.i.d.); dihydrotachysterol (½—1 cc. t.i.d.); and ammonium chloride (2 gm. q.i.d.). Calcium levels were followed by examinations of the blood and urine (Sulkowitch).† The blood calcium gradually increased and the urinary output of calcium gradually decreased to normal. The patient was discharged on the tenth postoperative day, asymptomatic by both clinical and laboratory study. She continued to take Hytakerol on discharge and was instructed in the technique and significance of the Sulkowitch test.

DR. HARRIS: The operation in this case was technically a fairly easy bilateral sub-total thyroidectomy. The parathyroid glands were demonstrated to the house officers assisting me. On the first and second postoperative days, when the patient started complaining of numbness and tingling, it was felt that she was "merely nervous" and that there was some element of hysteria. However, on the third day, simultaneously with the blood chemistry studies which were ordered, there appeared a strongly positive Chvotek's sign. By this time we were all convinced that her so-called nervousness and tingling were definite evidence of a severe calcium deficiency and that immediate treatment should be instituted.

DR. GERSON R. BISKIND‡: In the specimen removed, one parathyroid gland was demonstrated. We routinely examine thyroid tissue for parathyroid glands, but sometimes they are extremely difficult to demonstrate.

PRESENTATION OF SECOND CASE BY DR. MILTON PEARL, ASSISTANT RESIDENT: A 29-year-old female was admitted complaining of loss of weight, tiredness, weakness, and crying spells. Her BMR was +33. She was prepared with Lugol's solution and thiouracil for ten days, after which a bilateral subtotal thyroidectomy was done. During the procedure one parathyroid gland was removed. On the first day postoperatively she complained of numbness and tingling. Chvostek's sign was doubtful. She was given 1 gm. of calcium gluconate intravenously, 50,000 units vitamin A daily and 15 gm. of calcium gluconate t.i.d. by mouth. On the second postoperative day the Chvostek's and Trousseau's signs were negative, and she was subjectively asymptomatic.

On the third postoperative day I heard the patient scream, entered the room to find her unconscious. She lay in complete opisthotonos: the arms were adducted and the hands in complete carpopedal spasm. She was apneic and exhibited severe cyanosis. Within 30 seconds she was given 0.5 gm. of calcium chloride intravenously. Before the injection was completed, she had relaxed, was breathing well, and had completely regained consciousness. She had no recollection of the attack. The only residual evidence of the attack was the presence of a right subconjunctival hemorrhage. Calcium was administered intravenously when either the Chvostek's or Trousseau's sign was positive and when the Sulkowitch test showed low calcium excretion. Calcium gluconate 15 gm. t.i.d., viosterol 100,000 units daily, Dihydrotachysterol 1 cc. t.i.d., and ammonium chloride 1 gm. t.i.d. were administered. She remained relatively asymptomatic. A blood calcium on the fifth postoperative day was 10.5 mg. per cent. She was discharged on the eighth postoperative day.

DR. JACOB O. SMITH*: At home this patient ran her own Sulkowitch tests and regulated medication accordingly. She gradually reduced the dosage of the above drugs; approximately one month after her discharge she was perfectly well, had stopped all her medication and clinically did not present any evidence of tetany. Her blood calcium was normal at this time. It is almost one year now since the operation, and her blood calcium is still normal. She

* Chief, Department of Surgery.

† The Sulkowitch test requires merely the addition of an alkaline oxalate solution to the urine. If calcium is present, a white precipitate forms.

‡ Chief of Pathology and Director of Clinical Laboratory.

* Adjunct in Surgery.

has no symptoms whatsoever and has not taken any more medication.

Dr. Kalmen A. Klinghoffer†: The first patient developed tetany when only one parathyroid gland was removed. One would expect the four remaining parathyroid glands to take care of the essential function of these glands. It is probable that the symptoms were the result of trauma and temporary impairment to the blood supply of the four remaining glands. Some patients continue to require treatment for the symptoms of parathyroid insufficiency, whereas in others the disability is transient.

It is usually routine to diagnose tetany if the serum calcium falls and to control the treatment by the level of the serum calcium. One should remember, however, that the total serum calcium level varies with the serum protein level and that tetany is affected only by that portion of the calcium not bound to protein. If a patient does not have manifest tetany, one can demonstrate latent tetany by having the individual overventilate. Dehydration, too, makes the patient more susceptible, and the tetany manifest.

The management of Dr. Harris's patient was rather easy, as the tetany was only mild and the severe carpopedal spasm demonstrated by Dr. Pearl in the second patient was not present. The first patient was given calcium gluconate, viosterol, and dihydrotachysterol and the serum calcium gradually rose to 10.5 mg. per cent. The dihydrotachysterol dosage was then reduced. It has been customary to recommend a diet low in milk in patients with tetany because of the large amounts of phosphorus present; but with the other therapeutic aids, I do not think it necessary to subject the patient to an abnormal dietary regime. This patient tests her own urine. Serum calciums are determined at infrequent intervals.‡

Dihydrotachysterol was discovered 15 years ago by Holst and is more effective than Calciferol but is rather expensive. Therefore, as a patient improves, this is the medication first reduced. Calcium gluconate is given three times a day in tablespoonful doses; if medication is urgently required, it or calcium chloride should be given intravenously. Parathormone acts similarly to mobilize calcium, but the action is not immediate and injections have to be repeated at least once daily. It probably has no role in therapy now except in cases of parathyroidectomy for parathyroid adenoma.

Dr. John J. Sampson§: Doesn't tetany occur more promptly following total thyroidectomy?

Dr. Harris: It occurs with comparative rarity. Dr. David Berlin of Boston, who did much of the fundamental anatomical dissection in conjunction with this radical operation, stated that he had seen cases in which four to six parathyroids had been removed without clinical evidence of tetany.

Dr. Smith: Very frequently the symptoms are mild until two to three days after thyroidectomy. At the Mayo Clinic one out of ten patients developed some symptoms. I personally have had at least six to eight patients with postoperative tetany, all of which cleared under treatment in from two days to one month, usually all within several days after symptoms developed. I recall only one patient whom I saw about two years after thyroidectomy in whom tetany had persisted. Apparently two parathyroid glands had been removed at the time of operation. From all I could gather, the patient had received intensive therapy but continued to have symptoms. The blood calcium hovered around 8 mg. per cent. In the past five years the symptoms have been kept under control with approximately 8 gm. of calcium gluconate daily and 50,000 units of vitamin D two or three times weekly. There was no response to parathormone or AT 10. I would like to suggest that this method of treatment be applied to postoperative tetany cases immediately after the acute episode has been regulated in the usual manner.

Dr. Milton Gordon*: The number of parathyroid glands that can be demonstrated depends to a large extent on the visual acuity and experience of the surgeon. There is a direct relationship existing between the number found and the time spent in the search for them. Although four parathyroids are usually found, we must call this an average, rather than normal, since variations in number and position are common occurrences. Eight have been reported and, in one instance, six have been noted on the same side. The superior parathyroid glands are more constant in position, whereas the inferior glands vary greatly in position. They have been found on the posterior aspect of the trachea and even within the chest. However, wherever they are located, they will always be noted along one of the branches of the inferior or superior thyroid arteries.

Dr. R. Millzner, who has been studying the parathyroids since 1926, found, in cadavers, 30 per cent of the specimens to have one or more parathyroids on the true anterior or antero-lateral portions of the thyroid capsule. He has seen two but never three parathyroids removed at operation without some signs and symptoms of tetany arising.

A more common cause for parathyroid deficiency is injury to the glands, rather than removal. Each parathyroid receives only one small artery which usually is a branch of the inferior thyroid or an anastomosing ramus between the inferior and superior thyroid arteries. The superior parathyroid glands sometimes receive their blood supply directly from branches of the superior thyroid artery. All parathyroid glands have end artery supplies without direct collateral from any of the surrounding tissues. If the artery to a parathyroid gland is injured during operating, the gland will act as a graft; and unless it takes or compensation occurs, symptoms of deficiency will become manifest. Intact parathyroid glands often hypertrophy to compensate for injured

† Adjunct in Medicine.

‡ This patient discontinued all therapy April 15, 1947. On May 8, 1947, she was asymptomatic and all examinations were normal. The serum calcium level was 10.4 mg. per cent.

§ Chief, Division of Medicine.

* Assistant Resident in Surgery.

ones. It is therefore recommended that as much capsule as possible be permitted to remain during thyroidectomy. Too diligent search for the parathyroids may embarrass the blood supply and lead to difficulty.

DR. HARRIS: I am convinced that the demonstration which I made of the parathyroids probable interfered with the minute circulation to these important structures. I assure you that next time I will not demonstrate so conscientiously to my house staff.

I would like to ask why calcium therapy is not used more extensively in medical practice for many of the minor complaints of tingling, numbness and other forms of parasthesia. The striking effects of calcium therapy in this patient with a serious deficiency would seem to me to indicate that it could be used with value in many similar minor medical complaints that clinically simulate calcium deficiency.

DR. SAMPSON: In cases of hyper-ventilation, calcium can be used on an empirical basis. We do not like to use it indiscriminately, since many of these cases have a psychic element. There is also the danger of overdosage of calcium, since it is not a completely innocuous drug. I recall one case in which it caused death.

Clinical-Pathological Conference*

A 55-year-old Portuguese lumber mill worker was admitted to the Sonoma County Hospital August 27, 1946, with a complaint of hot, swollen, painful joints, a condition which had existed for two months.

Present Illness: The patient had been well until two months before, when he noted constant dull aching pain in his neck and right shoulder which was aggravated by movement. This pain subsided spontaneously in three days, to reappear at intervals of a few days successively in his left shoulder, right hip, knees and ankles. The joints would swell, become hot and painful to touch and to movement. During these episodes he also noted chilly sensations in the afternoon followed by a feeling of increased warmth which he interpreted as fever.

Past History: The patient had had six similar attacks at several year intervals, the first and most severe when he was 35 years of age. He had never been examined or hospitalized, but he declared that they were identical with the one which brought him to his hospital admission.

Systems: He had lost his appetite during the past two months and had also lost 40 pounds in weight.

Operations: None.

Injuries: None.

Past Illnesses: Gonorrhea at 20 years of age. Malaria at 22 years of age.

Physical Examination: The patient was a tall, asthenic, negroid male who appeared to have lost weight recently but was in no acute distress.

Temperature was 37.8 degrees C., pulse 100, respirations 20, and blood pressure 128/58. The only important physical signs were in the chest and joints. The respiratory excursions were equal and full. Moist rales were present in the right central lung field. A rough systolic and a soft diastolic murmur were heard in the fifth intercostal space in the midclavicular line. The aortic sound was absent. Both knees and the right ankle were swollen and painful on motion but were not hot, red or painful to touch at the time of admission.

Red blood corpuscles numbered 4,450,000; hemoglobin was 88 per cent Sahli; white blood cells numbered 17,500; polymorphonuclear leukocytes 84 per cent (12 per cent banded forms); lymphocytes 14 per cent; monocytes 1 per cent; eosinophiles 1 per cent. Urine: specific gravity 1.017; straw; turbid; pH 6.5; sugar, trace; acetone 0; albumin 0; casts 0; red blood corpuscles, occasional; white blood cells 3-4 h.d.f. Sedimentation rate (Wintrobe) corrected 16 mm. hour. Blood Kahn and Kline, negative; blood culture, no growth in 14 days. Widal, paratyphoid A and B, undulant fever and tularemia agglutinations all were negative. An A. P. film of the chest showed the lungs to be clear and the heart within normal limits of size and shape. An electrocardiogram showed left axis deviation with slight evidence of myocardial damage.

The patient was placed on bed rest, a cardiac diet, and was given sodium salicylate. On the third hospital day he began to show an afternoon temperature rise to 38.8 degrees C., and daily blood cultures were taken until the fourteenth day, all of which showed no bacterial growth. During this time the swelling and pain in the knee and ankle had subsided but there occurred a swelling of the right thumb, which was tender, red and hot. The patient's skin, mucous membranes and nail beds were examined daily for nodules and petechiae, but none were found.

At this time the patient complained of shortness of breath, a feeling of weakness and of a sore mouth. His tongue was red and smooth. A blood count on the sixteenth day revealed 2,870,000 red blood corpuscles, hemoglobin of 67 per cent, color index of 1.2 with marked anisocytosis and poikilocytosis, and 15,000 white blood cells with normal distribution. The polymorphonuclear leukocytes showed hypersegmentation, but no megaloblasts were seen. Gastric analyses on two occasions with histamine showed no free hydrochloric acid. Sedimentation rate remained high. Salicylates were discontinued and daily blood counts were made.

On the thirtieth hospital day the blood count was 2,360,000 red blood corpuscles, 78 per cent hemoglobin, color index, 1.39, reticulocytes 0. Liver extract was given parenterally and an immediate reticulocyte response to 8.5 per cent was noted. The blood count and hemoglobin returned to normal, where it remained; the sore mouth disappeared, and the patient felt strong again, but his temperature continued to rise daily to 38.5-39 degrees C. In spite of negative blood cultures, penicillin was begun in doses of 20,000 units every three hours. The temperature returned to normal and the sedimentation rate came within normal limits. This treatment was continued until a total of 12,000,000 units of penicillin was given. When it was stopped the patient's temperature came up again each afternoon, and within a week he developed signs of cardiac decompensation with dependent edema, enlargement of the heart shadow and moist rales in the lungs. He was digitalized and penicillin was started again, but he failed to respond and died on the eighty-sixth hospital day. An autopsy was performed within three hours.

* One of three Clinical Pathological Conferences held at the 76th Annual Session of the California Medical Association, April 30-May 3, Los Angeles.

DISCUSSION BY CLINICIAN

DR. BRUCK†: When the patient in this case was admitted to the hospital he complained of hot, swollen, painful joints. We find that he had had six similar attacks previously at intervals of several years. The first and most severe attack was at age 35, twenty years before he entered the hospital. He had never been examined or hospitalized previously but he declared that the previous attacks were identical to the one that brought him to the hospital. We must consider what these attacks might be. Before that, we should know that he had been down for two months with the latest attack. This started with dull aching pain in the neck and right shoulder which was aggravated by motion. The pain subsided spontaneously after three days, only to reappear some days later in the right shoulder, left knee and ankle. These joints were swollen, hot and painful to touch and movement. During these episodes the patient had chills. In the afternoon he felt warm and thought that he had fever.

We have, then, a story of acute, recurring joint disease, the most likely diagnosis being rheumatic fever. As we go on through his story we find that the patient lost appetite and also lost about forty pounds in weight in the two months before entry into the hospital. That was before the beginning of the latest illness.

He had had gonorrhea at the age of twenty years, 35 years ago and 15 years before his first attack of joint disease.

Physical examination on entry to the hospital showed him to be rather tall and thin with obvious evidence of weight loss. He was not in acute distress. Blood pressure of 128/58 is worthy of note in view of the heart findings later.

Respiratory excursions were equal. Moist rales were present in the right central lung field. There was a rough systolic and a soft diastolic murmur heard in the fifth intercostal space in the left midclavicular line.

The other important physical findings were in the joints, which were swollen and painful on motion, although at the time of examination they were not hot or red or painful to touch.

Laboratory work showed a blood count with 4,450,000 red cells and 88 per cent of hemoglobin (Sahle); white blood cells numbered 17,500; polymorphonuclear leukocytes were 84 per cent, of which 12 per cent were banded. This probably denotes pyogenic infection of some sort. Monocytes were 1 per cent which is essentially within normal limits. The urine examination, showing a specific gravity of 1.017 with a trace of sugar, apparently was not repeated and we find no further evidence of sugar at any time. Thus, we do not know whether or not the patient had diabetes. There were occasional red corpuscles in the urine, which is a finding worthy of note. There were occasional white cells. The blood cell sedimentation rate was corrected to 16 millimeters per hour. The blood culture showed no growth in 14 days. A film of the chest showed the lungs to be clear. The heart was said to be within normal limits in size and shape—this in spite of the fact that the patient had rales in the middle right lung field. It is worthy of note that the heart was said to be normal in size at this time because of the findings which appeared in his heart in his last hospital days. The electrocardiogram showed a left axis deviation with some evidence of myocardial damage. Thus far, the physical examination and the laboratory examination seemed to denote that this individual had probably had rheumatic fever in the past with rheumatic heart disease.

The patient was placed on bed rest, with a cardiac diet, and was given sodium salicylate. At that time he began to show an afternoon temperature rise at 38.8° C. Daily blood cultures were done from the third to the fourteenth day,—that is cultures were taken each day for eleven days, and none of these showed bacterial growth. During this time the swelling and pain in the knee and ankle had subsided but there had occurred a swelling of the right thumb. This was probably due to rheumatic fever, although swelling in the joints of fingers and thumbs, in my experience is not too common.

The patient's skin, mucous membranes and nail beds were examined daily for nodules and petechiae, but none were ever found. One could almost make up one's mind however, in spite of the absence of these evidences of embolism, that there must be a reinfection of the heart valve in question.

About this time the patient complained of shortness of breath, of weakness and of a sore mouth. About this time it was found that his blood count had dropped on the thirtieth hospital day to 67 per cent of hemoglobin with 2,860,000 red cells and 17,000 white cells. This part of this case is somewhat disturbing to me at least, because it would seem to denote that this individual had developed deficiency disease in addition to his infection during his hospital stay. The blood count resembles that of pernicious anemia with the exception of the increased white cells. Color index was 1.39 and it is stated that reticulocytes were not seen. With all of the factors in mind, one must consider a pernicious type of anemia. This view is further fortified when we note that there was a reticulocyte response to 8.5 per cent after the administration of liver extract, which response is in considerable amount. After administration of liver extract for a short time the blood count and hemoglobin returned to normal, where they remained. The sore mouth disappeared and the patient felt quite strong again. However, his temperature still remained high at 38.5 to 39° C. Despite the negative blood cultures penicillin was started and he was given doses of 20,000 units every three hours. This treatment continued until about 12,000,000 units were given, following which the patient's temperature receded, but when the penicillin was stopped the temperature went up again. Within about a week signs of cardiac decompensation de-

† Dr. Edwin L. Bruck, Clinical Professor of Medicine, University of California Medical School, San Francisco.

veloped with dependent edema, enlargement of the heart shadow and moist rales in the lungs. This is evidence of left ventricular failure. At this point penicillin was started again and the patient was digitalized, but these drugs proved to be of no avail; the patient did not respond, and died his eighty-sixth hospital day.

As we consider what must have happened to this patient, I think that the logical conclusions are: First, this individual had had recurrent rheumatic fever, or at least an acute joint disease which we must assume was rheumatic fever. Then, on top of his rheumatic valvular disease which followed the rheumatic fever, he developed another disease. The most likely thing of course, would be reinfection of the aortic valve. Ordinarily however, after reinfection of the heart valve, organisms should be present in the blood culture, but they were not. In addition to this, as I have said earlier in the discussion, he has another thing which bothers one. That is the unusual type of anemia which we must conclude was on a deficiency disease basis, because it apparently got well after the administration of liver extract.

I must repeat here that it is unusual for a reinfected heart valve to persist without a positive blood culture.

With a story like this, one must consider one other thing,—namely Libman-Sachs disease, but I must admit that this condition probably was not present as all of the urinary findings present in this condition were, in this patient, entirely absent.

I believe that the suddenness of his cardiac decompensation and the rather abrupt manner of death, preceded by the sudden increase in the size of his heart, is due to some abrupt change in the aortic valve such as splitting, perforation, rupture—any one of which could be due to the ulcerative process which we assume was going on.

To sum up then, my guess would be, and in the absence of a positive blood culture it must be a guess, that this individual had reinfection of his aortic valve which had previously been damaged by rheumatic fever; that when he came into the hospital he was suffering from rheumatic fever along with the reinfection of his valve. I also believe that during the course of his disabling disease, in the hospital, he developed a deficiency disease in his stomach and bone marrow and that this deficiency disease resembled pernicious anemia in some respects in that it was apparently alleviated by the administration of liver extract.

We believe that some catastrophe to the aortic valve preceded his death and we would suggest the possibility of either rupture or some other process due to ulceration of the valve.

DISCUSSION BY PATHOLOGIST

DR. DENNIS*: Before the autopsy was performed, a careful search was made of the skin, the mucous membranes and the nail beds in an attempt to discover petechial hemorrhages or evidences of embolic phenomena. None were found. The autopsy findings of interest were confined to the heart, the gastric mucosa, the liver, and the kidneys.

The pericardial sac appeared normal. Its surfaces were smooth and glistening, and there was contained within it approximately 10 cc. of clear, straw-colored fluid. The heart was just over the limits of normal for size, weighing 413 grams. No gross lesions were found in the right chambers of the heart. The left atrium appeared normal. The mitral orifice was patent, and the leaflets of its valve were intact and showed no gross disease. No gross lesions were seen in the myocardium of the left ventricle. The aortic orifice was distinctly narrowed, measuring only 6.5 cm. when opened to its fullest. There was fibrosis and contracture of the commissures. One valvular leaflet was completely calcified and immobile. On another leaflet there was a firm, verrucous vegetation characteristic of rheumatic valvulitis, and the right cusp contained upon it a fairly large gray-pink, firm vegetation which was characteristic of those seen in subacute bacterial endocarditis. This process had eroded through the valvular leaflet, and, together with the valve, was flapping free in the blood current. There was then, indeed, aortic insufficiency, as Dr. Bruck suggested.

Both kidneys contained several infarcts, some being old and depressed and partially organized, while others were swollen, red and violaceous. On opening the kidneys no obstruction of the calices or pelves was observed, but the infarcts were seen to occupy various positions in the cortices.

The gastric mucosa was stippled with innumerable petechial hemorrhages, some of which were older than others. The gastric mucosa was, therefore, atrophic and thin in the areas of hemorrhage but appeared to be of normal thickness in the areas between the hemorrhages.

Both chronic and acute passive congestion were found in the liver. These processes were so extensive that the liver cords were almost indistinguishable in most of the sections studied.

Microscopic Examination: There were present in the myocardium and the left ventricle numerous stellate areas of scarring and fibrosis, evidence of past insults to the myocardium. In addition to these older lesions, there were present a fair number of perivascularly located lemon or oval shaped lesions confined to the collaginous connective tissue between muscle fibers. These had swollen the muscle fibers out of shape and consisted of central areas of necrotic fibrous connective tissue, about which were found numerous lymphocytes and a few multinucleated giant cells. Aschoff cells were also seen in considerable numbers.

The gastric mucosa showed in the area of hemorrhage almost complete atrophy of the gastric glands and an abundance of hemorrhage in the mucosal and submucosal areas. The mucosa between the petechial hemorrhages was tall and appeared normal and contained numerous chief and parietal cells.

* Dr. R. L. Dennis, Department of Pathology, Sonoma County Hospital, Santa Rosa.

The microscopic appearance of the liver has been described.

The anatomic diagnoses of importance then were:

I. Rheumatic pancarditis, recurrent
 (a) Aortic stenosis
II. Subacute bacterial endocarditis
 (a) Aortic insufficiency
III. Infarcts, multiple, gastric mucosa, kidneys
IV. Chronic and acute passive congestion, liver

The immediate cause of death was acute pulmonary edema due to cardiac decompensation and failure.

An additional word needs to be said about the anemia. It is not surprising that Doctor Bruck was confused regarding the anemia, as the anemia that usually accompanies subacute bacterial endocarditis is of the secondary variety, that is, a hypochromic, normocytic anemia. Here there had developed during the course of the patient's illness a condition that had all of the appearance of an idiopathic Addisonian anemia. When the sections were viewed, however, the gastric mucosa was not seen to be uniformly atrophic, as is the case in idiopathic Addisonian anemia, and it must be concluded that the anemia was a simulated pernicious anemia resulting from the extreme degree of chronic and acute passive congestion of the liver.

If one remembers the modus by which these anemias arise, he will recall that there is present an extrinsic factor in the food which when taken into the body combines with an intrinsic factor elaborated by the gastric mucosa. These two factors combine and are stored in the liver and constitute the antianemic factor which is always available in the normal state for the bone marrow and is used apparently in some way to bring about the complete maturation of the red blood cells. When any one of these factors is deficient or absent, maturation of the red blood cells appears to be arrested at the megaloblastic stage, giving rise to a hyperplasia of the bone marrow and to an accumulation of great numbers of megaloblasts in the bone marrow, many of which eventually find their way into the peripheral blood stream. It is not believed, therefore, that this was an idiopathic Addisonian anemia, but one that arose on the basis of deficiency due to infarcts in the gastric mucosa, resulting in turn from emboli from the diseased heart valve.

It will be noted that in the photomicrographs shown no evidence of bacterial accumulations was seen, and blood cultures were never positive during life. It must be stated, therefore, that the vegetation from the heart valve was sectioned, and numerous typical cocciform, gram-positive organisms were seen.

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NOTICES AND REPORTS

The Physician Looks at the 1947 Legislative Session

The Medical profession was almost 100 per cent successful in its 1947 Legislative program. No legislation inimical to the public health or the maintenance of high professional standards was passed. On the affirmative side many bills either sponsored or approved by the profession were enacted into law. When the gavel fell at midnight, June 23, it ended one of the longest sessions in the history of California's legislatures, and the busiest session for the medical and allied professions.

During the 170 calendar days of the 1947 session, 4,317 bills were introduced. Careful scanning of each of these proposals, by the Sacramento office of The Public Health League of California, turned up a total of 239 bills that required constant watching. While compulsory health insurance was the top issue and would have made up a full program in itself, a myriad of other issues seethed through the long session. Through the cooperation of individual members of the profession who kept their legislators informed, it was possible to meet all these issues successfully. There were a few sponsored or approved measures which failed, but these were not of vital concern and may be pressed at future legislative sessions.

HEALTH INSURANCE

In his opening message to the Legislature, Governor Warren again demanded enactment of a compulsory health insurance bill. His demands were presented in Assembly Bill 1500 by Assemblymen Wollenberg and George D. Collins of San Francisco, and Senate Bill 783 by Senators Salsman of Palo Alto, Jespersen of San Luis Obispo and Dillinger of Placerville. The press and Capitol observers were quick to predict that this would be the top "fight" of the 1947 session. When the Senate bill was called for committee hearing its sponsors were given ample time to present their arguments. Business, industry, agriculture, insurance groups, the hospital association and organized medicine presented their opposition and the committee took the bill "under advisement." Two weeks later it was tabled by the committee without a dissenting vote, upon motion of Senator Keating of San Rafael, seconded by Senator Parkman of San Mateo.

Committee hearings on the Assembly bill were delayed (by the sponsors) until the closing weeks of the session. After hearing the arguments pro and con the Public Health Committee of the Assembly, on motion of Assemblyman McCollister of Mill Valley, voted to postpone action on the bill and refer it to an interim committee for study—if such a committee should be created. No such committee was created.

Defeat of these bills did not dampen the insistence of Governor Warren and he stated in a press conference: "Objections to health insurance have become threadbare and have lost their force. . . . We most certainly will get a health bill while I am governor."

Thus it appears certain that the issue will again be revived at the next session of the Legislature.

The C.I.O., which sponsored a bill in 1945, did not offer a proposal in the 1947 session.

ANTIVIVISECTION

Antivivisectionists waged a hot battle for enactment of two bills which struck at animal experimentation. The first of these, by Assemblyman Kilpatrick of Los Angeles, was tabled in committee. The second, by Assemblyman Evans of Los Angeles, was amended numerous times and then dropped by its sponsor. Thousands and thousands of letters and telegrams urging enactment of these bills were poured in upon members of the Legislature. A section of the press vigorously urged their adoption but the large majority of the assemblymen refused to become interested.

Skilful and telling opposition to the bills was presented by high officials of the medical and dental

schools of the state; the Animal Husbandry Division of the State College of Agriculture; the State Association of Veterinarians, and commercial laboratories.

CULTISTS

Chiropractors and Naturopaths were exceedingly active in seeking to secure favorable action by the Legislatnre. Two groups of Naturopaths were on hand with well financed and active lobbies. One group sponsored the perennial bill to set up a new Board of Naturopathic Examiners and grant licenses to all members of their association. Hearings on this bill dragged out for weeks in the Senate Committee on Public Health and Safety; the bill was amended numerous times, but still it failed to receive committee approval.

Another group sponsored Assembly Bill 717 to require the State Board of Medical Examiners to issue licenses to Naturopaths upon certification by an examining committee of Naturopaths. This bill too was frequently amended. It was made the subject of study by a sub-committee of the Assembly Committee on Public Health, and finally in the closing days of the session it came out to the Assembly floor "without recommendation." It was finally dropped.

Both of these groups served notice that they would be back again in 1949.

Chiropractors sponsored an amendment to their initiative to increase the number of hours of study required of applicants for license. This will be voted upon at the next general election. They unsuccessfully opposed several bills which tightened up the Medical Practice Act. Particularly did they oppose a Board of Medical Examiners bill to limit the use of the word "physician."

COUNTY HOSPITALS

For the eighth consecutive session of the Legislature a bill was introduced to open up county hospitals to all residents of the county. Its sponsor this year was Assemblyman Lowrey of Yolo County. It was refused committee approval and an effort to withdraw it from committee was defeated on the Assembly floor.

COMPENSATION-DISABILITY INSURANCE

No changes were made in the medical phases of the Compensation Act. Optometrists sought recognition under the act, but the Senate drastically amended their bill to provide that they cannot advertise or hold themselves out as "physicians."

The California Medical Association sponsored Senate Bill 1110 to clarify the position of physicians in certificates for sickness disability indemnity. Dentists and chiropodists will be permitted to certify under the act, within the scope of their practice, but optometrists were specifically excluded.

HOSPITALS

The Legislature approved an administration sponsored bill to permit matching of state funds with federal and local funds for hospital construction. Due to restrictions in the state constitution, this money can be applied only to public hospitals or hospitals constructed by hospital districts, unless the voters amend the constitution to permit non-profit hospitals to participate. Such a constitutional amendment was approved by the Assembly but was killed in Senate committee.

Senate Bill 510 sponsored by the C.M.A. to prohibit the employment of physicians by hospitals organized under the Hospital District Act in such manner as to result in profit to the hospitals, was passed and approved by the Governor.

An attempt to establish minimum standards for hospitals organized under the Hospital District Act was lost when furious opposition was presented by osteopaths. Two plane loads of osteopaths flew to Sacramento to pack the committee room. Conversely, a bill sponsored by osteopaths to require district hospitals to admit them to practice in such hospitals was defeated in Assembly committee.

Hospitals will be permitted to employ residents pending their examination for California licensure, and teaching schools will be permitted to exchange teachers without California licenses, under the terms of Assembly Bill 2428, passed and approved by the Governor.

Early in the session an emergency act was passed extending until January 1, 1948, the wartime exemptions under the Nursing Practice Act. Assembly Bill 2416, passed and approved by the Governor, makes some extensions in the reciprocity features of the Nursing Practice Act.

MEDICAL EXAMINERS

Senator Fred H. Kraft of San Diego was the author of a series of 15 bills sponsored by the Board of Medical Examiners and designed to strengthen the authority of the Board and to correct inequities. In the main these were passed by the Legislature, although the sponsors dropped some of them because of technicalities. Two of these bills of particular general interest are SB 1061 to prohibit the use of the title "physician" unless the user is licensed as a physician and surgeon, and SB 1064 to restrict the power of the courts to reverse the findings of the Board in qualifying medical schools for admission of graduates to examination or in rejecting applicants for examination. The former bill was passed by the Legislature and at this writing (July 5) is awaiting action by the Governor. The latter bill passed and has been approved by the Governor.

MISCELLANEOUS

A large number of bills covering miscellaneous topics of interest to members of the Medical profession were in the legislative hopper. Two bills to permit individuals to will all or parts of their bodies (particularly cornea for transplantation) passed and were signed into law. Assembly Bill 487 to prohibit rebates in medical practice met heavy opposition in committee and failed to receive approval.

Senate Bill 1257, commonly known as "the blood

bank bill," was approved by the Senate Committee on Public Health and Safety but was killed by the Senate Finance Committee.

An administration sponsored bill to extend state aid to local health departments was passed and is awaiting action by the Governor. The bill contains amendments suggested by the C.M.A.

In the closing hours of the session the Senate Committee on Governmental Efficiency tabled Assembly Bill 950, sponsored by the C.M.A., for the purpose of permitting employers to sign up for voluntary medical care programs unless employees rejected such plans. The bill had previously passed the Assembly. Both the A.F.L. and the C.I.O. bitterly opposed it.

Just as the gavel fell in the Assembly to signify that no further Assembly Bills could be introduced, Assemblyman Elliott of Los Angeles introduced a compulsory health insurance bill, modeled after the Olson-sponsored measure of 1937. It failed to receive any attention in the Assembly.

The Governor has until July 25 to sign or pocket-veto all bills passed in the final ten days of the session. Unless otherwise provided, all the new laws go into effect September 19.

Credit for the success of the legislative program goes to key-men in all districts of the state who responded to requests from the Sacramento office: to physicians who gave of their time to journey to the Capitol and appear as witnesses at committee hearings; to Sacramento physicians who made valuable contacts with legislators and to the masterful direction of the over-all picture by Dr. Dwight H. Murray, chairman of the C.M.A. Committee on Public Policy and Legislation.

Legislators have now returned to their homes, after a tiring session. A great many of these members gave powerful aid to the program of good public health legislation. It is urgently suggested that each member of the medical profession make it a special order of business to see his legislator and express appreciation for whatever support was given to this program.

C.M.A.'s Radio Program Becomes 30-Minute Sunday Afternoon Show on ABC

"California Caravan," the California Medical Association radio program inaugurated a year ago by the public relations department under authorization of the Council, has celebrated its first birthday anniversary by becoming a 30-minute Sunday afternoon show on the American Broadcasting Company's California network.

The C.M.A. show, dramatizing celebrated and colorful chapters in California history and utilizing its commercials to advance the cause of voluntary health insurance, is now broadcast every Sunday afternoon from 1:30 to 2 o'clock on the powerful ABC network.

In deciding upon the change from a 15-minute to a 30-minute program and from Friday evening to Sunday afternoon, the Council of C.M.A. weighed several important factors. One was that Sunday programs on the air command greater audiences than those on other days. Also it was recognized that the additional time will permit "California Caravan" to develop dramatic and historic themes in a manner not possible under the previous time limitation.

Of importance, too, was the consideration that the longer program will permit fuller presentation of commercials on the benefits of voluntary pre-paid health insurance, as opposed to compulsory systems.

Perhaps the major influence was a strong letter of commendation for "California Caravan" from the Los Angeles Tenth District unit of the California Congress of Parents and Teachers, comprising 178,000 members, coupled with an appeal that the program be broadcast earlier to enlarge the "family audience."

Said the P.T.A.: "California Caravan is one of the best programs on the air. We might add that parents are always looking for programs for family listening and would appreciate an earlier broadcast

Evidence that C.M.A.'s weekly radio program, "California Caravan," is building good will among the people of California not only as a dramatic exponent of the principle of voluntary health insurance, but as a worthwhile contribution to family-type radio entertainment is contained in a letter written June 2 by Mrs. Clara S. Logan, radio chairman, Los Angeles Tenth District, California Congress of Parents and Teachers.

"It is our opinion that 'California Caravan' is one of the best programs on the air." Mrs. Logan's letter says. "It is especially to be recommended because it is an excellent example of how an educational program can be an entertaining one. Parents are always looking for programs for family listening, and 'California Caravan' is one the entire family can enjoy together."

The Los Angeles Tenth District P.T.A. has more than 178,000 members, and Mrs. Logan's letter further reveals that the entire membership is being advised to tune in on "California Caravan," through the medium of the District's recently published radio guide.

This guide, besides going into the homes of P.T.A. members, is being placed in all the 10,000 classrooms of the Los Angeles city school system.

for this program which is one the entire family could enjoy together."

The question "Does it pay to advertise?" also entered into the Council's consideration of whether to expand the radio program. When the radio-newspaper advertising campaign of C.M.A. was inaugurated a year ago, California Physicians' Service had an insured membership of 225,000. Today its membership is well over 500,000.

Not only CPS, but other progressive voluntary health insurance systems, apparently have benefited substantially from the C.M.A.'s campaign to make the people of California "health insurance conscious." The number of people insured in all the various health insurance systems in California increased more than 1,000,000 in 12 months.

California stations which will broadcast "California Caravan" on the new Sunday time schedule, 1:30 to 2 p.m., are:

Los Angeles	KECA	Sacramento	KFBK
San Francisco	KGO	Stockton	KWG
Watsonville	KHUB	Bakersfield	KPMC
Santa Barbara	KTMS	Eureka	KHUM
San Diego	KFMB	Riverside	KPRO
Santa Maria	KCOY	Brawley	KROP
Fresno-Visalia	KTKC	Indio	KREO

CANCER NEWS:

The Cancer Commission of the California Medical Association is continuing its program of professional education by means of published articles in California Medicine, periodic refresher courses for physicians, and special lectures before component county medical society groups. County medical society secretaries desirous of securing speakers on cancer for future programs should communicate with Dr. David A. Wood, Cancer Commission, 450 Sutter Street, San Francisco, at the earliest possible date.

The Cancer Commission also functions as a portion of the Board of Directors of the California Division of the American Cancer Society. That Society is advancing the work of popular education and assistance in cancer with the cooperation of the Cancer Commission.

The program of the Society and the Commission is essentially as follows: *to make maximum use of methods already available for the prevention, diagnosis and treatment of cancer, and to continue research* for improvement in those fields. At the present time the program includes the gradual development of Information Centers, Detection Centers and Consultative Tumor Boards.

Information Centers are units whence the public may be directed to physicians for examination and treatment. In larger counties they are combined with units for home and hospital service to needy cancer patients, and other service projects.

There is considerable demand for so-called Detection Centers. Detection centers are defined as agencies, usually connected with hospitals, to which apparently *healthy* persons may go for periodic physical examinations directed to the detection of accessible cancer. The practical operation of detection centers is a complex and relatively expensive undertaking. It is estimated that at least 400 apparently healthy adults over the age of 40 must be examined for every accessible cancer detected. The cost per examination approximates $20. With several million persons in this state over the age of 40, it is quite evident that periodic physical examinations of all apparently healthy adults would be a herculean task.

A more rapid solution of the problem is undoubtedly to attempt to "make every physician's office a detection center." This is the policy of your cancer organizations.

There is now available in most general hospitals in this state a Consultative Tumor Board.

The minimum standards for Approved Detection Centers and Approved Consultative Tumor Boards are reprinted below for your information.

It is hoped that within a relatively short number of years there will be available within a reasonable distance in every part of the state (depending upon population density and geographic considerations) physicians interested in and competent to diagnose and treat cancers—notably the triad of a pathologist, a radiologist and a surgeon. By such means there will be readily available to the public the trained personnel required for the diagnosis and treatment of this disease.

The following standards are available in reprint form for members desiring such. Copies have already been sent to all Centers and Tumor Boards, and the staff members contemplating the creation of such, to the State Department of Public Health and to similar agencies.

* * *

Minimum Standards for Cancer Detection Centers*

The Council of the California Medical Association is authorized to approve such cancer detection centers as are recommended to it by the Cancer Commission as having fulfilled the minimum standards.

Policy of California Medical Association

The California Medical Association recognizes and asserts the importance of periodic physical examinations in all persons over forty years of age and in all women after pregnancy in order to detect early chronic diseases with special emphasis on the early detection of cancer.

Therefore, the California Medical Association strongly urges its members to adopt a regular pro-

* Members desiring to obtain further details regarding organization and experiences in existing Detection Centers may read:

1. The Service Handbook of American Cancer Society, 1947 (pp. 5, 16-22 and 30 and 34); obtainable from the state office, American Cancer Society, 405 Montgomery Street, San Francisco.
2. The Health Maintenance booklet published by the Donner Foundation, Philadelphia, 1947.

gram of complete periodic health examinations of all patients after middle life in their private practice. The California Medical Association also strongly urges the public to seek regular periodic complete physical examinations by their family physician.

Further, the California Medical Association approves the establishment of "cancer detection centers" by component county societies for the periodic examination of presumably well adults provided such centers meet the minimum standards adopted by the California Medical Association.

California Medical Association Minimum Standards for Cancer Detection Centers†

Purpose: The purpose of the "cancer detection center" shall be to make periodic physical examinations of presumably well persons to discover early chronic disease with special emphasis on the early recognition of cancer or lesions that may lead to cancer.

Definition (of the American Cancer Society and Approved by the A.M.A.): "The cancer detection, cancer prevention or well-person clinic is designed to detect abnormalities not producing symptoms sufficient to send the patient to the doctor. These clinics do not diagnose or treat diseases."

Preamble: The cancer detection center has proved to be a useful means of discovering early cancer or lesions that may lead to cancer. The center may be a valuable public health measure, but in order to protect the public both physically and mentally, it is essential that the examinations in these clinics be conducted with judgment and accuracy. The cancer detection center properly conducted can be the means of saving the lives of cancer patients, but if not properly conducted, it can be a source of great danger. If the examinations in the center are not thoroughly and efficiently made early cancer may be overlooked and the patient dismissed with a sense of false security which will delay further adequate treatment. Also, failure of the clinic to evaluate supicious lesions may develop an unjustified and ineradicable cancer phobia.

In order to assure the public of the best type of periodic examination and to protect the public from incomplete methods and unfounded fear, the C.M.A. has adopted the following program of "minimum standards" for "cancer detection centers" in California.

1. The cancer detection center shall have the continued approval and support of the county medical society. The clinicians must be members of that society.

2. The center must be conducted in the out-patient department of a Class A medical school or an approved hospital. If located away from the institution it must be operated as an integral out-patient department of that institution.

3. Where there is no approved hospital or medical school in the community the cancer detection center will be operated by the county medical society and all of the activities will be under the immediate supervision and control of the society. The center shall be conducted in a local hospital unless special approval is granted by the Cancer Commission after careful investigation.

4. The center shall be supervised by a physician who has had training and experience in the diagnosis and treatment of cancer.

5. The center shall have proper housing and adequate facilities and supplies to conduct complete physical examinations. The clinical laboratory and x-ray departments shall be easily accessible to it.

6. A sufficient number of clinicians shall be available to conduct the center at regular intervals and to provide for complete physical examination of every patient accepted by the center.

7. Adequate records shall be kept of the history, physical findings and recommendations and of the disposition of the patients. Sufficient personnel shall be available to provide for necessary nursing, stenographic and record services.

8. The examination shall include:
 (a) History
 (b) Routine blood count, urinalysis and serology
 (c) X-ray film of the chest (mass survey)
 (d) Nose and throat examination, including lips and interoral
 (e) Examination of the breasts
 (f) Physical examination of the chest, abdomen and extremities (including skin)
 (g) Examination of lymph nodes: neck, axillae and groin
 (h) Pelvic examination
 (i) Rectal examination
 (j) Papanicolaou vaginal smear (where feasible).

9. Examinees that present suspicious history or abnormal physical findings shall be referred to their family physician for diagnosis and treatment. If there is no family physician, the patient shall be referred to a physician or clinic as directed by the policy of the county medical society.

10. A summary of the pertinent facts and recommendations of the center shall be sent to the physician or clinic to whom the patient is referred.

11. One month after such reference to physician the case shall be followed up by letter or social service visit and a complete report of the diagnosis and treatment shall be obtained.

12. Only presumably well adult patients will be accepted for examination. No patient under treatment for cancer will be accepted without permission of the attending physician.

13. Examinees shall pay a registration fee of $2.00 for each appointment, collected in the name of the institution conducting the center.

14. All publicity concerning the center must have the approval of the county medical society.

† Cancer Detection, Cancer Prevention or Well-Person Clinics, Health Maintenance and Cancer Prevention Clinics, and Examination Centers are all terms applied to such clinics. In California "detection clinics" shall officially be known as "Cancer Detection Centers."

15. Regularly scheduled periodic meetings will be held by the staff to study, review and follow up the cases seen in the clinic. An annual report of the work of the center will be sent to the Cancer Commission.

Minimum Standards for Consultative Tumor Boards

The Minimum Standards for Consultative Tumor Boards are presented by the Cancer Commission as a guide for the formation of new boards in California. These Standards will be the basis of approval and recommendations for all Tumor Boards that apply to the California Division of the American Cancer Society for financial support.

I. Personnel

Each Tumor Board must meet the following minimum requirements:

A. *Officers*

1. Chairman—M.D.
2. Professional secretary—M.D.
3. Lay secretary.

B. *Regular members* (all must be certified)

1. Pathologist (pathologic anatomy)
2. Radiologist
3. Surgeon
4. Internist
5. Gynecologist.

C. *Consultative members* (preferably certified but not mandatory)

1. Otolaryngologist
2. Orthopedist
3. Urologist
4. Thoracic specialist
5. Dermatologist
6. Ophthalmologist
7. Plastic surgeon.

D. *Approval*

In those instances where one or more members of the Regular Tumor Board are not certified or where the standard number of specialists is not available, approval may be granted after consideration by the Cancer Commission.

II. Meetings and Procedure

1. Each Board shall have regularly scheduled periodic meetings and shall have a minimum attendance of 80 per cent of the Regular members. Consultative members shall maintain 80 per cent attendance when notified of presentation of cases in their specialties.
2. The professional members of each Board shall serve without pay.
3. Each Board shall see all patients who present themselves regardless of the financial status of of the patients.
4. All technical and/or therapeutic procedures instituted under the direction of the Board shall be limited to indigent or needy patients. Such procedures for private patients shall be arranged for according to accepted private practice standards.
5. Boards must keep clinical records, cross indices and follow-up files on each case, and these files shall be in accordance with the standard set up by the State Cancer Commission.
6. All data compiled and recorded by the Board shall be open to inspection by the Cancer Commission or its representative.
7. Cases shall be presented before any therapy has been instituted when feasible.
8. All licensed physicians shall be welcomed and encouraged to attend the meetings of the Board.
9. All cases of tissue diagnosis of tumors presented at approved Tumor Boards shall be submitted with pertinent data to the central tumor registry of the California Cancer Commission upon the establishment of said registry.
10. The diagnostic nomenclature used by the registry shall be in conformity with that recommended by the California Cancer Commission.

III. Types of Board

A. *County Hospitals*

Tumor Boards established in County Hospitals and receiving financial support from the American Cancer Society shall at all times make their consultative services available to any and all private cases that are referred by a private physician. They shall refer all patients who are not eligible for County care and who are not referred by a private physician to a choice of three members from a panel approved by the County Medical Society.

B. *Private Hospitals*

Tumor Boards in private hospitals are designed primarily for consultation on cases referred by the staff or referred by private physicians. Patients referred by private physicians will be sent back to the referring physician with a written record of the findings of the Board and recommendations for management. In exceptional cases Tumor Boards may accept patients for consultative service who are not referred by a physician. In such instances, after review by the Consultative Board, the patient will be given the names of three physicians from a panel designated by the local County Medical Society. A follow-up check will be kept on each patient seen by the Board regardless of the disposition of the case.

IV. General Plan

Under ideal circumstances, all new tumor cases should come before the Tumor Board on first admission to the institution (either as inpatient or outpatient). However, in large institutions this would tend to overburden the Board with non-problematical cases, and in all institutions might be productive of

delay. Hence, a working plan for the average institution might be as follows:

A. Cases in which surgery is the accepted mode of treatment and which are in prompt need of such (e.g. annular tumor of descending colon) do not need routine presentation in person. A filled-out "approved case record for Consultative Tumor Boards" will be sufficient. (Until such time as case record forms approved by the Cancer Commission of the C.M.A. are available, the American College of Surgeons form may be used.)

B. Cases in which radiotherapy is the accepted mode of treatment (e.g. small cutaneous angiomata) could be handled similarly. The correctly filled out case record form would be furnished for notification purposes.

C. Cases in which operation or irradiation *might* be but are not unquestionably indicated (either alone or in combination), (e.g. a stage II carcinoma of the breast) should be shown.

D. The actual therapeutic results, immediate and remote, should be carefully analyzed at regular intervals.

Dr. Goin's Statement as Witness On National Public Health Bill

The following is the text of a statement made June 4 in the District of Columbia by Lowell S. Goin, M.D., when he appeared in behalf of the California Medical Association, California Physicians' Service and the American College of Radiology as a witness in the hearings on S. 545, the National Public Health bill, before the Committee on Labor and Public Welfare of the United States Senate.

My name is Lowell S. Goin. I am a physician in active practice in Los Angeles, California. I am past president of the California Medical Association, past president of The American College of Radiology, and I am president of California Physicians' Service which, I am sure you know, is the voluntary health care plan instituted by the medical profession in California. I find myself in general agreement with the purposes set forth in this bill, although I regret to say that I cannot agree in every respect with every particular. I think that there is no doubt that a problem of the distribution of medical care actually exists. It does not exist for the reason commonly alleged by the social reformer, but rather because we live in a complex social-economic milieu, and since medicine has become so vast in the scope of its knowledge, it becomes increasingly difficult to apply this knowledge well for the benefit of sick humanity under our present method of distributing medical care. The present bill, in my opinion, represents the first intelligent attempt that has been made to cope with this problem on the national level.

All discussions of the problem of medical care are confused by a recently developing tendency to use the words "health" and "medical care" as though they were interchangeable words; as though one were a synonym of the other. Nothing is farther from the truth. Medical care is, in fact, only a part of the problem of health and not even the most important part, since health depends almost entirely upon good nutrition, good housing, adequate clothing, adequate rest periods, adequate recreation, sanitation, hygiene, the regulation of patent medicine advertising, the control of the cults, etc. Medical care consists of the care of the sick and injured, while health consists of *not* being sick or injured; and it seems to me that the Federal government, if sincerely interested in health and welfare of the people, might well turn its attention to some of these other problems rather than attacking the minor fraction of the problem called medical care.

I think that it is debatable that the care of the health of the American people is a natural function of the government. All history seems to indicate that the best government is that which governs the least; and the constant intervention in the private lives of citizens by the Federal government is a thing which I view with alarm. I am not even sure that we should take money from the taxpayer, transport it to Washington, and return it to the several states from which it came, since this too represents one more bit of paternal intervention by the centralized government. Perhaps I am wrong in this opinion, but I am a sturdy believer in the rights of the sovereign states and I dislike to see intervention by the Federal government which is not of absolute necessity. I am certain that the policy expressed in Section 2 of the pending bill, namely that it is the policy to make available medical, hospital, dental and public health services to every individual regardless of race or *economic status* is not a sound policy, and that people who are economically able to care for themselves should by all means do it, since it is thus that our individuality is preserved.

Nevertheless the general intentions of this bill are most commendable, and I am pleased to be able to endorse them. There is no doubt that at present, health and medical functions are widely scattered through the various departments and agencies of the Federal government and that it is an excellent thing to collect these agencies into a single national agency as the bill proposes to do. Obviously the Pure Food and Drug Act has to do with the health of the people and I feel that there is no doubt that it should be coordinated in an agency such as is proposed in the current bill. If the bill were to have no other effect than the coordination of these now widely scattered agencies the bill would be a good bill for that reason alone.

I am in grave doubt as to Section 203 of Title 2, which authorizes the Surgeon General to expend $10,000.00 each year for developing more effective measures for the prevention and control of cancer and to assist the states and political subdivisions of the states to establish and maintain adequate meas-

ures for the prevention and control of cancer including the provision for appropriate facilities for diagnosis, etc. I think that an appropriation of money for the general purpose of research into the nature and cause of cancer is a most commendable thing and, indeed, I suspect that a much larger sum should be made available. I see no more reason, however, to provide $10,000,000 for the diagnosis and control of cancer than to provide a similar sum for the control and diagnosis of gastric ulcer, arthritis, or any other disease. As a matter of fact more people actually die of heart disease than die of cancer, and perhaps it would be even more appropriate to appropriate an even larger sum of money for the control of heart disease. Since there is only one other section of the bill of which I feel critical perhaps I had best deal with it at once.

In Section 712 there appear the words "no plan or modification shall be disapproved because the director disapproves of the methods proposed if the program is designed and calculated by July 1, 1952, to provide hospital services, surgical services, medical services and periodic physical examinations as required by Section 712, Paragraph 'A'," and to this is added: "it is intended that the states shall devise in each case the methods by which this end is attained." These words appear to me to permit a state to institute a system of compulsory sickness insurance, the Federal government giving a grant-in-aid to such state for the purpose of administering such a compulsory sickness insurance program. It is true that this section seems to be somewhat in conflict with Paragraph 4 of Subsection A, of the same section, in which there occur the words "such program may at the option of the state provide medical care services in one or more of the following ways: in institutions, in the home or in physicians' offices; such program may also provide for the furnishing of such services to such families and such individuals by means of payments in the nature of premiums or partial premiums, or reimbursement of expenses, or otherwise by the state to any voluntary health, medical or hospital insurance fund or other fund not operated for profit, etc." I am unaware as to whether the conflict is unintentional or whether it is actually the intent of the writers of this bill to permit a state having a compulsory sickness insurance program to secure a grant-in-aid for the furtherance of that program. If the latter is the intent, then I must oppose this section of the bill as I have been, and am, strongly opposed to any such system of administering medical care.

I am greatly interested in voluntary health care plans, and I consider the development of such plans to be entirely in accord with our American tradition in which people care for themselves, rather than become the dependent wards of the state. It is my sincere belief that voluntary health insurance, if left to develop untrammeled by any compulsory sickness insurance plan, and in particular if aided by the states so that the medical indigent may be included in such plan, will develop and administer much better medical care than the people will ever receive under any sort of compulsory insurance plan. It is interesting to note that to the best of my knowledge and belief no compulsory sickness insurance plan thus far presented has made the slightest effort to care for these medically indigent people, leaving them exactly where they are now, a burden upon the charity of the medical profession. Voluntary health insurance would afford an excellent means for the state to render medical care to persons totally or partly unable to pay for it, by the simple means of subsidization of these people by payment of their premiums, or part of their premiums, to existing voluntary health care plans. Incidentally I note that the bill refers frequently to voluntary non-profit plans. Although I have no interest in any except a non-profit plan, I really see no reason why commercial insurance carriers who are prepared to offer adequate health care plans should not have their premiums paid likewise, since the objective of such legislation is not the establishment of any particular method of caring for the sick and injured, but simply of insuring that care is available to them. Certainly in our American system, the making of a profit is no sin, and I repeat that I see no reason why commercial insurance carriers could not easily be included in the proposed program.

As to voluntary health care plans the social reformer argues that there are many objections to them: that there are not a sufficient number of people covered; that people will not provide themselves with voluntary coverage; that the existing plans do not offer complete coverage; that preventive medicine is not sufficiently emphasized; and that protection of the citizens' health is a natural function of the government. I have already spoken of the theory that the protection of the citizens' health is a natural function of government stating that I thought it a debatable doctrine. Let us now consider the additional objections.

It is true that not nearly as many persons are covered as would be covered by a national compulsory plan. But does this mean that people should be compelled by law to do something for their own protection—something that they seem thus far not to be persuaded is essential? As experience develops, as an increasingly large number of subscribers are protected, will not these (if they are satisfied with their coverage) urge their friends and relatives to buy voluntary insurance protection and, if the plan is bad, will it not fall of its own weight? Why, then, must we suddenly impose a new, untried, and highly experimental plan upon the American people? If voluntary insurance proves inadequate or unsatisfactory it may be terminated at any time by those who are insured, since, if they become dissatisfied, they will simply cease paying for unsatisfactory service. All experience, however, indicates that a compulsory plan, once enacted into law, is never repealed, but is simply compounded by amendments, executive orders, and decrees. More than thirty million people are now covered by one type or another of voluntary health insurance, and it seems reason-

able to assume their satisfaction with it, since they continue to pay their premiums.

To the argument that not enough people will protect themselves without compulsion, there are two answers. Seventy-one million of our people have protected themselves with life insurance which they bought and continue to pay for of their own free will, simply because they have been persuaded as to the necessity of so doing. Of course, this vast number of insured was not reached in the first few years of selling insurance, nor should we expect tremendous numbers to enroll themselves in health insurance plans until educational campaigns have had an opportunity to persuade them; and if, after such opportunity has been afforded, people still decline to buy health insurance, will it not indicate their disinclination to budget themselves for medical care, either voluntary or compulsory? And are we not still free men capable of deciding for ourselves, without the intervention of an all-wise government?

Existing voluntary plans do not offer complete coverage, (although some of them approach it rather closely) nor does the currently proposed compulsory plan, in spite of claims to the contrary. Complete coverage is not yet offered because we simply do not know how to do it; nor do those who demand enactment of compulsory insurance. Many voluntary plans offer protection which is complete except for the first two visits to the doctor: a reservation which is necessary to protect the plans from frank imposition, but which could scarcely be held to be a very serious obstacle to obtaining medical care. Little as the compulsory insurance proponents say about it, an identical provision was contained in the last Murray-Wagner-Dingell Bill. Complete coverage will be offered by voluntary plans as soon as the necessary experience has accumulated. Without experience, it cannot be offered, nor can the necessity for experience be by-passed by writing a law.

Preventive medicine is a phrase much beloved by the social reformer, who seems to have a child-like faith that a visit to the panel practitioner will prevent disease. The hard fact is that medicine has not yet attained to the goals wished for, and that most talk about preventive medicine is wishful thinking. How shall we prevent heart disease (except that due to rheumatic fever)? What examination today makes one aware of the coronary disease impending? How do we prevent cancer of the stomach and intestinal tract? The plain hard answer is that there is no such examination, and that we do not know how to prevent cancer or heart disease, and yet these are the two greatest killers that we know. Moreover, it will be well to know how compulsory health insurance proposes to accomplish miracles in preventive medicine. There were two references to the matter in the lately pending legislation: One authorized grants-in-aid to research institutions, and the other directed that the administration of the law shall be such as to prevent accident, disease and premature death! A consummation devoutly to be wished for, but a typical example of the type of thinking that leads to compulsory health insurance—that is, write it down in a law and it's accomplished.

What have the voluntary plans to offer? Service varying from almost complete (that is, two visits deductible) to that covering only catastrophic illnesses. Not every one has need of the same amount of service; the voluntary plans afford to each the chance to select that which he requires. Sixty-four voluntary plans are now in effect, not including the large amount of indemnity sickness and accident insurance which is written annually by the commercial companies. These plans offer their insured the opportunity to select the doctor of their choice, to go to the hospital which is preferred and, in general, to receive medical care of like quality and under the conditions to which they are accustomed. No administrative officer intervenes: no permits are needed; the relationship between doctor and patient remains the personal and confidential one of the past. No panels are formed: no one's permission is needed to choose a doctor or to change doctors if the patient is dissatisfied. That compulsory sickness insurance can or will permit these freedoms is simply not true.

That voluntary plans can do so is shown by the experience of California Physicians' Service. It is difficult to conceive that its astonishing growth, from 4,000 beneficiary members in 1940 to about 500,000 in 1947, could have occurred unless the members were well satisfied with the services they have received. That they are, in fact, well pleased is shown by the very small cancellation rate, averaging about 2.5 per cent. The growth rate of California Physicians' Service is rapid, and is gaining velocity constantly.

With the cooperation of the California State Grange the Service has enrolled 13,000 farmers of California representing about 60 per cent of the Grange membership, giving them service for surgical operations, specifically including fractures and dislocations, and including hospitalization. After one year's experience, we are reexamining the contracts with a view to including medical care (as distinguished from surgical care) while the member is hospitalized, and we hope eventually to offer full coverage to these farmers and their families. The success of this program may be estimated from the following quotations from a letter signed by Mr. George Shelmeyer, Master of the California State Grange: "As you know, this program has attracted national attention. It is our belief the Grange C.P.S. cooperative program can be built into one of the largest and most satisfactory voluntary health services in the United States."

"Through this program we have been able to make available to our membership surgical care and hospitalization, at prices which they can afford to pay. We consider this plan one of the most sound and constructive movements in voluntary health programs."

This represents our first attempt to give service to individuals who are not employees of a common employer, and who cannot be subjected to payroll

deduction. It is earnestly hoped that this effort will lead to the development of experience sufficient to warrant the coverage of other non-employed persons.

Recently the Service has enrolled 16,000 employees of Standard Oil Company of California—employees scattered over the entire state; and in increasing numbers employers are hastening to secure this health care service for their employees.

With our present experience we are able to supply surgical care, including hospitalization and specifically including fractures and dislocations, at the following rates: male employees $2.00 per month, female employees $2.65 per month, employee and one family member $4.90 per month, employee and two or more family members (including any number of dependents) $6.80 per month.

Practically complete coverage representing all medical care except the first two visits to the doctor, and including hospitalization, is supplied at the following rates: male employee $3.15; female employee $3.80 monthly, employee and one family member $6.05, employee and two or more family members (including any number of dependents) $7.95 monthly.

It will be noted that these latter contracts are practically complete health care services. It has been found necessary to require the beneficiary to pay for the first two visits to the doctor to discourage the perfectly human tendency to abuse the plan. If the first visit or the first two visits to the doctor lead to surgery these visits also are covered.

If it be argued that these subscription fees are high, let me point out that there is thus far no one who knows what these services would cost under compulsory sickness insurance and to remind the committee that the New Zealand compulsory sickness insurance plan operates with a 7.5 per cent pay roll deduction; that it is further subsidized with money from the general tax fund and that its cost now equals 2 per cent of the national income of New Zealand. I may also remark that in the Senate Interim Committee Hearings in the California Senate, testimony was given by proponents for compulsory sickness insurance that a payroll deduction of between 6.75 and 7.15 per cent would be necessary to finance a full coverage program.

I say again that voluntary health insurance will give to the American people more medical care and much better medical care than can ever be furnished by a politically managed compulsory plan. Particularly is this true if the states are permitted, or assisted, in the subsidization of this care for those who are actually unable to afford it. That the growth of voluntary health care plans has been slow is to be expected. Evolution is a slower and less dramatic process than revolution but the revolutionary product is likely to be the sounder one. Voluntary health care plans are being developed and as rapidly as may be. They have been developed on sound actuarial bases by men who know that the complex and vexing problems of medical care are not to be solved by writing words and making them into laws. With the few reservations previously mentioned I thoroughly commend this bill and trust that it will be enacted into law.

Minutes of Council Meetings

TENTATIVE DRAFTS OF THE 340TH, 341ST, 342ND, 343RD, 344TH AND 345TH MEETINGS OF THE COUNCIL, CALIFORNIA MEDICAL ASSOCIATION

340th Meeting

The meeting was called to order by Chairman Bruck at 1:15 p.m., April 29, 1947, the Biltmore Hotel, Los Angeles.

1. *Roll Call:*

Present were President McClendon, President-Elect Cline, Speaker Askey, Vice-Speaker Alesen, Councilors Bruck, Shipman, Henderson, Anderson, Kneeshaw, Kindall, MacDonald, Green, Cherry, MacLean, Moody, Thompson and Regan, Editor Wilbur and Secretary Garland.

Absent: Councilors Johnston and Crane.

Present by invitation were Executive Secretary Hunton, Legal Counsel Hassard, Assistant Executive Secretary Wheeler, Dr. E. L. Remmen, president of the Los Angeles County Medical Association, county society executive secretaries Stanley K. Cochems of Los Angeles, Rollen Waterson of Alameda, Frank J. Kihm of San Francisco, Kenneth Young of San Diego, and Joseph Donovan of Santa Clara, and Mr. William Tobitt, public relations director of the Alameda County Medical Association. Mr. Clem Whitaker, public relations counsel, also present by invitation.

2. *Minutes:*

Minutes of the 339th Council meeting were approved.

3. *Membership:*

(a) A report of membership as of April 25, 1947, was received.

(b) Upon motion duly made and seconded, it was voted to reinstate four members whose 1946 dues had been received since the Council meeting of March 15, 1947.

(c) Upon motion duly made and seconded, it was voted to reinstate 1,523 members whose 1947 dues had been paid subsequent to April 1, 1947.

(d) Upon motion duly made and seconded, it was voted to elect to retired membership the following: Robert Thomas Legge and Frank D. Walsh, Alameda County; William H. Eaton and Liva Charles McLain, Kern County; Harold D. Cornell, San Diego County; Walter H. Brown, Harold Brunn, Henry D. Brusco and Lionel S. Schmitt, San Francisco.

(e) Upon motion duly made and seconded, it was voted to elect to associate membership the following: Elmina N. Cameron, Walter W. Ellwood, Alameda County; W. F. Stein, Fresno County; Roy O. Gilbert, Los Angeles County; C. W. Hartsough and Saul Ruby, San Diego County; Elizabeth Tock and Robert Dyar, San Joaquin County.

(f) Upon motion duly made and seconded, it was voted to elect to life membership the following: E. J. Couey, Fresno County, and N. D. Morrison, San Mateo County.

4. *Financial:*

(a) A report of bank balances as of April 25, 1947, was received. Also received were reports of receipts and expenditures for the period ended April 25, 1947, and a balance sheet as of April 25, 1947.

(b) Upon motion duly made and seconded, it was voted to transfer to the Trustees of the California Medical Association $206,000 par value U. S. Treasury 2½ per cent bonds of 1972-1967 purchased as authorized at the 399th Council meeting.

(c) Upon motion duly made and seconded it was voted to purchase an additional $200,000 par value U. S. Treasury bonds and to transfer ownership of such bonds to the Trustees of the California Medical Association.

(d) The monthly allocation of $5,000 to California Physicians' Service to cover additional expenses to C.P.S. because of CMA public relations activities was discussed; the executive secretary stated that he had talked with Mr. William Bowman, executive director of C.P.S., in this regard and it had been agreed that discontinuance of this allocation would be recommended following the close of the Association's fiscal year on June 30, 1947. It was decided to hold this item open for further consideration when C.P.S. representatives would be present.

5. *Report of the Council:*

The report of the Council, as published in the March, 1947, issue of CALIFORNIA MEDICINE, was discussed. Upon motion duly made and seconded, it was voted to approve the Council report as published, subject to additions which might be voted prior to the meeting of the House of Delegates.

Upon motion by McClendon, seconded by Anderson, with amendments made and approved by the mover and seconder, it was voted without dissent that the Council go on record as disapproving a constitutional amendment offered in the 1946 House of Delegates, the effect of which would be to increase the size of the Council and that the Council chairman appoint a committee to draft a resolution to that effect to be presented to the House of Delegates as an addendum to the report of the Council.

Legal Counsel presented a proposed amendment to the Constitution, to amend Article IV, Section 1(e) of the Constitution, covering eligibility for election to Life Membership. Upon motion duly made and seconded, it was voted that the proposed constitutional amendment be approved and placed before the House of Delegates as an addendum to the Council report.

6. *Public Relations:*

Mr. Whitaker reported on the progress of the public relations campaign, stating that Voluntary Health Insurance Weeks had been staged in 34 counties to date and would be concluded in another five counties by June 30, 1947. He recommended that such campaigns be carried on in the other 19 counties in the last half of 1947.

Mr. Whitaker made the following recommendations:

(1) That more thought be devoted to curing the causes of the demand for compulsory health insurance, through the establishment of a professional relations department within the C.M.A.

(2) That courses in public relations be established in the medical schools of California by the C.M.A.

(3) That the C.M.A. authorize and finance research to determine if California Physicians' Service and commercial insurance companies can insure against catastrophic illness or injury and, if so, on what terms.

In response to a question, Mr. Whitaker stated that a 30-minute radio program on Sunday afternoons would cost about $1,500 weekly as compared with the present cost of about $1,260 weekly for a 15-minute program on Friday evenings. Doctor Cline suggested that an additional $6,000 be added to Mr. Whitaker's budget to cover the cost of such a change in the last half of calendar 1947.

Mr. Whitaker then presented a proposed budget to cover the activities of his organization on behalf of the Association for the fiscal year to start July 1, 1947. For the first half of this period, the final six months of calendar 1947, he proposed a budget to include the completion of Voluntary Health Insurance Weeks, the continuation of the radio program and the continuation of field forces now engaged. For the first six months of 1948 he recommended the elimination of field forces except for one newspaper contact man, the institution of a modified schedule of newspaper advertising and the continuation of the radio program.

7. *Advisory Planning Committee:*

Through its chairman, John Hunton, the Advisory Planning Committee reported on its meeting of April 29, 1947, at which time discussion was held on the advisability of instituting a professional relations program within the framework of the C.M.A., the program being aimed at determining and correcting those elements in the daily contact between the individual physician and the individual patient from which bad public relations for the entire profession

might arise. The committee suggested that if such corrections could be made, the ultimate public relations of the medical profession might be improved and the demand of the public for a system of compulsory health insurance eliminated.

The committee offered a three-point program, upon which it requested that no action be taken at this meeting but that consideration of the proposal be given by the Council prior to the termination of the 1947 Annual Session. The program is as follows:

(1) That emphasis on the "human relations" in medical practice be started immediately in order to improve physician-patient relationships.

(2) That this work be undertaken directly by the C.M.A. through its Executive Secretary, under the direction of the Executive Committee and in cooperation with the Advisory Planning Committee.

(3) That the Executive Committee be authorized to appropriate sufficient funds to implement this program as it develops.

Upon request by the Council chairman, this proposal was discussed briefly by Messrs. Waterson, Cochems, Donovan, Young and Kilm.

Upon motion duly made and seconded, it was voted to defer consideration of this proposal and of Mr. Whitaker's budget to the April 30 meeting of the Council, at which time these items would be discussed together with the proposed budget for the Association's 1947-1948 fiscal year.

8. *Meeting Place for 1948:*

Upon motion by Anderson, seconded by Cherry, it was unanimously voted that the 1948 Annual Session be held in San Francisco.

9. *Palo Alto Clinic:*

Chairman Bruck read the correspondence between the Association and the Santa Clara County Medical Society and Stanford University resulting from the 399th Council meeting. Upon motion duly made and seconded, it was voted that the Council resolution adopted at the 399th Council meeting be added to the Council report to the House of Delegates.

10. *Committee on Committees:*

The Council chairman was authorized to appoint a committee (consisting of Councilors MacDonald, Henderson and Alesen, Chairman) to recommend members for appointment as members of standing committees.

11. *Tuberculosis and Health Association:*

Upon motion by Shipman, seconded by Henderson, it was voted that the Council chairman appoint a special committee to serve as a liaison between the Association and the California Tuberculosis and Health Association.

12. *Proposed Class of Membership:*

Doctor McClendon suggested that the creation of a new class of membership, to include medical students, internes and residents, be considered by the Council. Upon motion by McClendon, seconded by Kindall, it was voted that a constitutional amendment covering such membership class be prepared for consideration by the Council. The Council chairman appointed Doctors McClendon and Kindall to this committee and suggested that they also study the possibility of a separate organization of students, internes and residents, to be affiliated with the C.M.A.

13. *Time and Place of Next Meeting:*

It was agreed that the next meeting of the Council should be held at 8 a.m., Wednesday, April 30, 1947, in Conference Room 6 at the Biltmore Hotel.

Adjournment.

EDWIN L. BRUCK, M.D., *Chairman*
L. HENRY GARLAND, M.D., *Secretary*

341st Meeting

The meeting was called to order by Chairman Bruck at 8 a.m., April 30, 1947, in the Biltmore Hotel, Los Angeles.

1. *Roll Call:*

Present were President McClendon, President-Elect Cline, Speaker Askey, Vice-Speaker Alesen, Councilors Bruck, Shipman, Crane, Henderson, Anderson, Kneeshaw, Kindall, MacDonald, Green, Cherry, MacLean, Moody, Thompson and Regan, Secretary Garland and Editor Wilbur.

Absent: Councilor Johnston.

Present by invitation were Executive Secretary Hunton, Legal Counsel Hassard, Assistant Executive Secretary Wheeler, county society executive secretaries Waterson of Alameda and Donovan of Santa Clara, Public Relations Consultant Whitaker, Mr. Ed Clancy of California Committee for Voluntary Health Insurance, Doctor Dorothy Allen, secretary of the Alameda County Medical Association, and Doctor C. L. Cooley, secretary, and Mr. William Bowman, executive director, of California Physicians' Service.

2. *Budget for 1947-1948:*

Consideration was given to the proposed budget for the fiscal year to start July 1, 1947. Upon motion duly made and seconded, it was voted that an item of $10,000 for medical defense education be added to the proposed budget.

Upon motion duly made and seconded, it was voted that Mr. Whitaker's proposed budget be approved and that Mr. Whitaker be requested to appear before the House of Delegates to outline his proposed plans.

After consultation with Mr. Bowman, it was moved, seconded and carried that an item of $20,000 for additional assistance to California Physicians' Service be added to the budget.

With the items noted above, it was regularly moved, seconded and carried without dissent that the budget of expenditures for the 1947-1948 fiscal year be approved.

3. *Dues for 1948:*

After discussion, it was regularly moved, seconded and carried unanimously that the Council recommend to the House of Delegates that C.M.A. dues for 1948 be set at $60 and that this figure be used in estimating the Association's revenues for the 1947-1948 budget.

4. *Addendum to Council Report to House of Delegates:*

The committee appointed on April 29 to bring in a proposed resolution covering the constitutional amendment offered in 1946 (Councilors Kneeshaw, chairman, MacDonald, Thompson and Henderson) presented a report setting forth the views of the Council and upon motion duly made and seconded, it was voted that this report be incorporated in the addenda to the Council report to the House of Delegates. In the voting on this motion, Speaker Askey disqualified himself as holding the deciding vote in the House of Delegates in case the Speaker was called upon to vote. Doctor Regan asked that his vote be recorded as opposed to the motion. The other councilors from Los Angeles and adjoining areas spoke at considerable length on behalf of the motion.

5. *Time and Place of Next Meeting:*

It was agreed that the next meeting of the Council be held on Thursday, May 1, at 8 a.m. in Conference Room 6 of the Biltmore Hotel.

Adjournment.

EDWIN L. BRUCK, M.D., *Chairman*
L. HENRY GARLAND, M.D., *Secretary*

342nd Meeting

The meeting was called to order by Chairman Bruck at 8 a.m., May 1, 1947, in the Biltmore Hotel, Los Angeles.

1. *Roll Call:*

Present were President McClendon, President-Elect Cline, Speaker Askey, Vice-Speaker Alesen, Councilors Bruck, Shipman, Crane, Henderson, Anderson, Kneeshaw, Kindall, MacDonald, Green, Cherry, MacLean, Moody, Thompson and Regan, Secretary Garland and Editor Wilbur.

Absent: Councilor Johnston.

Present by invitation were Executive Secretary Hunton, Legal Counsel Hassard, county society executive secretaries Waterson of Alameda and Donovan of Santa Clara, William Tobitt, public relations director of the Alameda County Medical Association, public relations consultant Whitaker, Doctor Dwight H. Murray, chairman, C.M.A. Committee on Public Policy and Legislation, and Doctor C. L. Cooley, secretary of California Physicians' Service.

2. *Report of Committee on Committees:*

Upon motion duly made and seconded, the recommendations of the Committee to name members of C.M.A. standing committees was accepted and the Council chairman authorized to name the chairmen of the standing committees.

3. *Order of Business of House of Delegates:*

Speaker Askey requested that the order of business of the House of Delegates be set to provide that the Council recommendations on the budget and on the level of dues for 1948, together with Mr. Whitaker's report to the House, be given in executive session prior to consideration of any other business at the second meeting of the House. Upon motion duly made and seconded, it was voted that the order of business of the House of Delegates be so arranged.

4. *Budget and Dues for 1948:*

It was regularly moved, seconded and carried that the members of the Auditing Committee (Councilors Shipman, Kindall and MacLean) appear before Reference Committee Number 3 of the House of Delegates to discuss the 1947-1948 budget and the Council recommendation of dues for 1948.

5. *California Physicians' Service:*

Doctor C. L. Cooley, secretary of California Physicians' Service, reported to the Council that the $20,000 voted on April 30 as a budget item for assistance to C.P.S. would probably not be needed by California Physicians' Service and stated that he would recommend to the Trustees of C.P.S. that funds for these purposes not be requested of the C.M.A. after June 30, 1947. Upon motion duly made and seconded, it was voted to eliminate this item from the proposed budget for 1947-1948.

6. *Public Policy and Legislation:*

Doctor Dwight H. Murray, chairman of the Committee on Public Policy and Legislation, discussed the present legislative situation and the activities of his committee and offered to discuss with any qualified member of the Association any aspects of the committee's work.

7. *Time and Place of Next Meeting:*

It was agreed that the next meeting of the Council be held at 8 a.m. on Friday, May 2, 1947, in Conference Room 6 of the Biltmore Hotel.

Adjournment.

EDWIN L. BRUCK, M.D., *Chairman*
L. HENRY GARLAND, M.D., *Secretary*

343rd Meeting

The meeting was called to order by Chairman Bruck at 8 a.m., May 2, 1947, in the Biltmore Hotel, Los Angeles.

1. *Roll Call:*

Present were President McClendon, President-Elect Cline, Speaker Askey, Vice-Speaker Alesen, Councilors Bruck, Shipman, Crane, Henderson, Anderson, Kneeshaw, Kindall, MacDonald, Green,

Cherry, MacLean, Moody, Thompson and Regan, Secretary Garland and Editor Wilbur.

Absent: Councilor Johnston.

Present by invitation were Executive Secretary Hunton, Legal Counsel Hassard, Doctor Dwight H. Murray, legislative chairman, county society executive secretaries Waterson of Alameda, Kihm of San Francisco and Donovan of Santa Clara, Doctor Dorothy Allen, secretary of the Alameda County Medical Association, Mr. William Tobitt, public relations director of the Alameda County Medical Association, and Mr. Clem Whitaker, C.M.A. public relations counsel.

2. *Committee on Committees:*

A supplemental report of the committee to name members of the standing committees was accepted.

3. *C.P.S. Fee Schedule Committee:*

A special committee to review the C.P.S. fee schedule was received and, after discussion, it was regularly moved, seconded and carried that this report be referred by the Council to the Reference Committee on New Business and Resolutions of the C.P.S. Administrative Members.

4. *Public Policy and Legislation:*

Mr. Hassard reported on the current legislative status. Relative to Assembly Bill 950, a C.M.A. measure to provide for direct contracts between voluntary health insurance underwriters and employers, he brought out the fact that certain groups of physicians providing prepayment medical care services had requested an amendment so that the bill would cover their activities. Such an amendment was approved by the Council in Assembly Bill 1200 in the 1945 legislative session, the bill from which the present AB 950 is patterned. It was regularly moved, seconded and carried that the Council approve an amendment to AB 950 to cover the request of physician groups that their activities be included in the terms of this measure.

5. *A.M.A. Meeting—June 9-13, 1947:*

Secretary Garland reported on correspondence with the A.M.A. in which the latter organization had requested that the C.M.A. name a county medical society secretary as California representative on a committee to work with the chairman of a meeting of all county society officers scheduled by the A.M.A. to be held in Atlantic City on June 8, 1947. Dr. Garland reported that after consultation with other Association officers it was felt unwise to make such a nomination on the grounds that the scheduling of this meeting had apparently exceeded the authority granted the A.M.A. Board of Trustees by the December, 1946, meeting of the A.M.A. House of Delegates. He requested the A.M.A. chairman to supply information on this point, but received no reply to three inquiries. Dr. D. H. Murray, as a Trustee of the A.M.A., suggested that Dr. Robertson Ward of San Francisco, one of the C.M.A. delegates to the A.M.A. and secretary of the San Francisco County Medical Society, be named for this post.

On motion by Cherry, seconded by Shipman, it was voted (by an 8 to 5 vote) that Dr. Murray's suggestion of Dr. Robertson Ward be approved and that Dr. Ward and Secretary Garland be requested to attend the meeting of county society officers in Atlantic City on June 8, 1947, as observers only.

6. *Illness of Councilor Johnston:*

It was brought out that Councilor Johnston had been unable to attend Council meetings because of illness and it was regularly moved, seconded and unanimously carried that the Secretary send a note to Dr. Johnston expressing the sympathy of the Council in his illness and best wishes for his speedy recovery.

7. *Time and Place of Next Council Meeting:*

It was agreed that the next meeting of the Council should be held at 8 a.m. on Saturday, May 3, in Conference Room 6 of the Biltmore Hotel.

Adjournment.

EDWIN L. BRUCK, M.D., *Chairman*
L. HENRY GARLAND, M.D., *Secretary*

344th Meeting

The meeting was called to order by President Cline at 8 a.m., in the Biltmore Hotel, Los Angeles.

1. *Roll Call:*

Present were President Cline, President-Elect Askey, Speaker Alesen, Vice-Speaker Donald A. Charnock, Councilors Bruck, Shipman, John Ball, Crane, Henderson, Anderson, Kneeshaw, Donald D. Lum, MacDonald, Green, Cherry, MacLean, Wilbur Bailey, and Thompson, Secretary Garland and Editor Wilbur.

Absent: Councilor Regan.

Present by invitation were Executive Secretary Hunton, Legal Counsel Hassard, Executive Secretary Kihm of San Francisco County Medical Society and Mr. Clem Whitaker, public relations counsel.

2. *Election of Chairman:*

Upon nomination, duly seconded, Edwin L. Bruck was unanimously elected Chairman of the Council.

3. *Election of Vice-Chairman:*

Upon nomination, duly seconded, Sidney J. Shipman was unanimously elected Vice-Chairman of the Council.

4. *Tuberculosis Association Liaison Committee:*

It was regularly moved, seconded and carried that the Chairman appoint a liaison committee to deal with the California Tuberculosis and Health Association.

5. *Executive Session:*

At this point the Council went into executive session.

It was regularly moved, seconded and carried that Secretary-Treasurer Garland he reappointed for the coming year at no salary.

It was regularly moved, seconded and carried that Editor Wilbur be reappointed for the coming year.

It was regularly moved, seconded and carried that Peart, Baraty & Hassard be reappointed legal counsel for the coming year, with authority given to the Executive Committee to fix the terms of compensation for legal services.

It was regularly moved, seconded and carried that Executive Secretary Hunton be reappointed, with authority granted to the Executive Committee to negotiate a term contract and compensation for a period not to exceed three years.

It was regularly moved, seconded and carried that Mr. Whitaker be appointed a member of the Advisory Planning Committee provided the appointment comes within the scope of the original resolution which established this committee.

6. *Open Session:*

At this point the executive session was declared ended and Doctors Wilbur and Garland and Messrs. Hunton and Hassard returned to the meeting.

7. *Time and Place of Next Meeting:*

It was agreed that the next meeting of the Council be held the afternoon of June 21 and the day of June 22 in San Francisco.

8. *Committee on History:*

Councilor Kneeshaw brought up the request of Dr. George H. Kress, Honorary Historian, for the appropriation of funds to carry on the work of preparing a history of the Association. It was regularly moved, seconded and voted that the Secretary notify Dr. Kress that the Council will be glad to receive and consider any such request for funds for this work.

9. *Catastrophe Insurance:*

Mr. Whitaker suggested that a study be instituted to determine whether or not catastrophe health insurance could be properly underwritten by C.P.S. or by commercial insurance carriers. He suggested that the Bureau of Medical Economics of the American Medical Association might study this question in conjunction with insurance underwriters.

Upon motion duly made and seconded, it was voted that the Secretary be instructed to direct a communication to the American Medical Association requesting that such a study be made, that Mr. Whitaker be directed to consult with California insurance companies along the same line and that the Council request the Board of Trustees of C.P.S. to consider the advisability of research along this line.

10. *Tuberculosis and Health Association:*

Report was made on a meeting in Napa County at which a representative of the California Tuberculosis and Health Association had advocated a system of compulsory health insurance. After discussion, it was regularly moved, seconded and carried that the Secretary be instructed to write to the secretaries of the component county medical societies, pointing out the possibilities of such advocacy by this organization or its representatives and suggesting that they bear such possibility in mind.

11. *Resignation of Council Regan:*

Chairman Bruck read to the Council a letter from Dr. Louis J. Regan, offering his resignation as a member of the Council. It was regularly moved, seconded and carried that this resignation be accepted.

Chairman Bruck read a second letter from Dr. Regan, offering his resignation as a member of the Committee on Medical Defense. It was moved, seconded and carried that this resignation be not accepted.

12. *Vacancy on Council:*

The resignation of Dr. Regan left a vacancy on the Council, which under the terms of Article X, Section 8 of the Constitution, may be filled by appointment by the Council until the next meeting of the House of Delegates. It was agreed that this vacancy should be considered at the next meeting of the Council.

Adjournment.

EDWIN L. BRUCK, M.D., *Chairman*
L. HENRY GARLAND, M.D., *Secretary*

345th Meeting

The meeting was called to order by Chairman Bruck in the Fairmont Hotel, San Francisco, at 1:30 p.m., Saturday, June 21, 1947.

1. *Roll Call:*

Present were President Cline, President-Elect Askey, Speaker Alesen, Vice-Speaker Charnock, Councilors Bruck, Shipman, Ball, Crane, Henderson, Anderson, Kneeshaw, MacDonald, Green, Cherry, MacLean, Bailey and Thompson, Secretary Garland, Editor Wilbur.

Absent: Councilor Lum, because of absence from the state.

Present by invitation were Dr. Dwight H. Murray, legislative chairman; Legal Counsel Howard Hassard, Executive Secretary Hunton, Assistant Executive Secretary Wheeler, Public Relations Counsel Clem Whitaker, and Frank Kihn, executive secretary of the San Francisco County Medical Society.

2. *Minutes:*

On motion duly made and seconded, minutes of the 340th, 341st, 342nd, 343rd and 344th meetings of the Council, held on April 29, April 30, May 1, May 2 and May 3, 1947, were approved.

On motion duly made and seconded, minutes of the 203rd meeting of the Executive Committee, held May 22, 1947, were approved.

3. *Membership:*

(a) A report of membership as of June 20, 1947, showing 8,558 active members in good standing was received.

(b) On motion duly made and seconded, 183 members whose 1947 dues had been received since April 30, 1947, were reinstated to active membership.

(c) On motion made and seconded, retired membership was granted to the following members: Charles Robert Nelson, Alameda County; Dan Hazen Moulton, Butte-Glenn County; John J. Seibel, Fresno County; A. Golitzin, Anna B. Lefler, St. Clair R. Lindsley, James F. Presnell, C. E. Rooney, David Thomson, Herbert W. Wall, Cassius M. C. Walters and William L. Weber, Los Angeles County; Allan Lewis Bramkamp, Benjamin E. Garrison and A. W. Walker, Riverside County; Emmett E. Sappington, San Francisco County; Homer DeWitt Rose, San Joaquin County; and Orta Edward Kuhn, Ventura County.

(d) On motion duly made and seconded, associate membership was granted to the following members: Charles D. Marple, Marin County; Elizabeth Lowenhaupt, San Francisco County, Elmer Bingham and Lester Gale, San Joaquin County; and Louis J. Needels, Santa Barbara County.

4. *Financial:*

(a) Statements of bank balances as of June 20, 1947, revenues and expenditures for May, 1947, and the eleven months ended May 31, 1947, and a balance sheet as of May 31, 1947, were received.

(b) Report was made that $200,000 par value U. S. Treasury bonds, due 1972 and callable 1967, had been purchased in accordance with Council authorization at the meeting of April 29, 1947, and these bonds transferred to the Trustees of the California Medical Association.

(c) A report was received from California Physicians' Service, showing that expenditures under the community enrollment campaigns during the first three months of 1947 had totaled $10,773.44, or $4,226.56 less than the $15,000 advanced by the Association to cover these additional expenses. The balance for this period has been returned to the Association.

5. *Public Relations:*

Mr. Whitaker reported on a proposed change in the length and hour of the Association's radio program, "California Caravan." It is now possible to secure a period from 1:30 to 2:00 p.m. each Sunday for 52 weeks on the American Broadcasting Co. network at a cost of $77,000 annually, compared with the present cost of $66,000 annually for the 15-minute evening period on Fridays. It would also be possible, with this new hour, to work with the Parent-Teachers Association and with schools in training drama and history students and thereby enlist their support of voluntary methods of health care insurance. On motion by MacLean, seconded by Askey, it was voted to make this change and to appropriate the sum necessary to carry on this program for a full 12 months.

Mr. Whitaker also pointed to the approval of "California Caravan" by the State Parent-Teachers Association and it was agreed that this approval should be publicized through the schools, department of education and other means.

Regarding community enrollment campaigns for voluntary health insurance, it was brought out that some educational and consumer problems had been encountered in the larger cities. On motion duly made and seconded, it was voted that such campaigns in the 19 California counties remaining to be covered should be confined for the time being to the more rural counties and that the campaigns in the larger counties be deferred until fall or later.

Dr. Cline read a letter from the California Tuberculosis and Health Association, in which a letter to county medical societies from the California Medical Association was criticized. After discussion, it was regularly moved, seconded and carried that an appropriate reply be prepared and presented to the Council the following day, the reply to bring out the fact that the medical association was in process of naming a committee to meet with the Tuberculosis and Health Association on matters of mutual interest.

6. *Public Policy and Legislation:*

Dr. Bruck reported on his attendance before a Senate Committee hearing on AB 1500, Governor Warren's health insurance bill, on June 10, at which time the bill was retained in committee and referred to an interim committee for study provided such a committee was to be named. (Later action by the Legislature failed to result in the formation of such a committee.)

Mr. Hassard then reported on the various bills in which the Association was interested, pointing out that on the whole the Legislature had given favorable consideration to the point of view of organized medicine on numerous bills.

7. *Legal Department:*

Mr. Hassard reviewed the present fee schedule for compensation cases and suggested the Association again look into a possible upward revision of this schedule. Upon motion by Cline, seconded by Anderson, it was voted that the Committee on Industrial Practice study this matter and bring in a report to the next meeting of the Council.

8. *Vacancy on Council:*

Dr. Askey called attention to a vacancy existing on the Council by reason of the resignation of Dr. Louis J. Regan of Los Angeles. He moved that the Council elect Dr. Eugene Hoffman of Los Angeles to this vacancy until the next meeting of the House of Delegates. This nomination was seconded by Dr. Charnock and the Council voted unanimously to elect Dr. Hoffman.

9. *Executive Session:*

At this point the Council went into executive session, with Mr. Hassard invited to remain present.

Mr. Hassard read the terms of an employment contract proposed for the employment of Mr. John Hunton as Executive Secretary. He was instructed to prepare a section covering partial disability of the Executive Secretary and report back the following day.

The Council then considered a statement from Peart, Baraty & Hassard in the amount of $4,119.53, covering $3,800 for professional services and $319.53 for expenses for the period of the 1947 session of the State Legislature. This statement had been submitted in accordance with the instructions given Mr. Hassard at the 203rd meeting of the Executive Committee. Upon motion duly made and seconded, this statement was approved for payment.

10. *Recess:*

At this point, 5:30 p.m., the Council recessed until 9:30 a.m., Sunday, June 22, 1947.

11. *Sunday, June 22, Meeting:*

The meeting was called to order by the Chairman at 9:30 a.m., Sunday, June 22, 1947, at the Fairmont Hotel, San Francisco.

12. *Roll Call:*

Present were President Cline, President-Elect Askey, Speaker Alesen, Vice-Speaker Charnock, Councilors Bruck, Shipman, Ball, Crane, Henderson, Anderson, Kneeshaw, MacDonald, Green, Cherry, MacLean, Bailey, Thompson and Hoffman, Secretary Garland and Editor Wilbur.

Absent: Councilor Lum.

Present by invitation were Executive Secretary Hunton, Legal Counsel Hassard, Public Relations Counsel Whitaker, Legislative Chairman Murray, Dr. C. L. Cooley, secretary of California Physicians' Service, Mr. William M. Bowman, executive director of C.P.S., Assistant Executive Secretary Wheeler and Executive Secretaries Rollen Waterson of Alameda County and Frank J. Kilm of San Francisco County.

13. *Rise From Executive Session:*

Upon motion duly made and seconded, the Council voted to rise from the executive session in effect at the time of the previous day's recess.

14. *Letter to Tuberculosis Association:*

Dr. Cline read the draft of a letter to the California Tuberculosis and Health Association, which, upon motion duly made and seconded, was approved to be sent by the Association secretary.

15. *Return to Executive Session:*

At this point the Council again went into executive session, with Mr. Hassard requested to remain.

Mr. Hassard read and explained a section of the proposed contract between the Association and the executive secretary covering partial disability and on motion duly made and seconded it was voted that the Chairman of the Council, the legal counsel and the Executive Secretary work out the details of this section.

On motion duly made and seconded, the Chairman of the Council and the Association Secretary were instructed to sign this contract when the section covering partial disability was satisfactorily framed.

16. *American Medical Association Meeting:*

Dr. Cline reported, as chairman of the California delegation, on the annual session of the A.M.A., held in Atlantic City June 9 to 13, 1947. He paid tribute to the fine work of all California delegates and stated that there was apparently increasing respect in the A.M.A. House of Delegates for the objectives which California delegates have sought in recent years.

17. *C.M.A. Annual Session—House of Delegates:*

The Council next considered the decisions of the Association's House of Delegates at its meetings of April 30-May 2, 1947.

(a) On Resolution No. 1, covering organization of sections of general practice in hospitals, it was regularly moved, seconded and carried that a copy of this resolution be sent to every hospital in California, with a letter of transmittal which would point out that this resolution was not intended to apply to hospitals which are not already departmentalized.

(b) On Resolution No. 6, covering prizes for scientific papers and scientific exhibits at annual session, it was regularly moved, seconded and carried that the Council Chairman appoint a committee on prizes, with authority for such committee to name a secret committee on awards.

(c) On Resolution No. 8, covering free choice of physician in compensation cases, it was regularly moved, seconded and carried to refer this matter to the Committee on Public Policy and Legislation for such action as it might be able to take, and to write the author of the resolution pointing out that further legislative proposals cannot be introduced at this session and requesting specific suggestions for legislation which might be introduced at the next session of the Legislature.

(d) On Resolutions No. 14 and No. 19, covering medical economics, it was moved, seconded and carried to refer these resolutions to the standing Committee on Medical Economics.

At this point there was a discussion of medical economics, including relationships between California Physicians' Service and the county medical societies. On motion duly made and seconded, and after the adoption of amendments, it was voted that a letter be sent to all county society secretaries suggesting (1) that publicity be given to the existence of professional conduct (fee-complaint) committees within each county society and (2) that efforts be made to eliminate all professional or lay organizations which grant rebates from fees received.

On motion by Cline, seconded by Anderson, it was voted to appropriate $2,500 to the Committee

on Medical Economics to inaugurate the work of the committee in accordance with instructions of Resolutions No. 14 and No. 19 of the 1947 House of Delegates.

On motion by Cline, seconded by Bailey, the Council voted the following program:

1. That California Physicians' Service be requested to continue its normal growth, and accept such new groups as may apply for membership, but to devote its primary effort to increasing the membership in existing groups during the next several months.

2. That Mr. Whitaker prepare and mail to all Association members a news letter or bulletin containing such information as he believes to be indicated after conference with the Committee on Medical Economics, the officers, the Legislative Committee and the Advisory Planning Committee.

3. That teams consisting of (1) an official representative of the Association, (2) an official representative of California Physicians' Service and (3) Mr. Whitaker or a member of his staff be sent to various county medical societies at their request to clarify, answer and attempt to resolve any questions concerning health insurance which may remain.

(e) On Resolution No. 10, covering qualifications of coroners, it was regularly moved, seconded and voted that an appropriate letter be sent to all county medical societies.

(f) On Resolution No. 22, covering the study of all health insurance programs, it was regularly moved, seconded and carried that this matter be referred to the Committe on Medical Economics.

(g) On Resolution No. 23, covering a study of the Principles of Ethics with particular regard to the propriety of certain types of prepaid medical care contracts, it was moved by Cline, seconded by Charnock and voted that a committee be appointed to study the matter and bring in a report, with no time limit set for the final report.

(h) On Resolution No. 25, covering awards for research by interns and residents, it was regularly moved, seconded and carried that the matter be referred to the committee on prizes established under 17 (b) above.

(i) On Resolution No. 29, covering a revision of the Association's Constitution and By-Laws, it was regularly moved, seconded and carried that the Council proceed with the formation of a committee, the Chairman of the Council to make the appointments to this committee for the Councilor districts as called for in the resolution.

18. *New Mexico Physicians' Service:*

A letter was read to the Council, in which the writer sought to become a temporary employee of the Association for the purpose of investigating asserted difficulties faced by New Mexico Physicians' Service. A motion that this letter be referred to New Mexico Physicians' Service failed to pass. On motion by Thompson, seconded by Alesen and amended by Askey (amendment accepted by the mover and seconder) it was voted that the writer of the letter be referred to New Mexico Physicians' Service and advised that the California Medical Association felt no need of his services at this time.

On motion by Kneeshaw, seconded by Ball, it was voted to send the executive secretary to New Mexico to look into the asserted difficulties there.

19. *California Physicans' Service:*

Resolution No. 28 of the 1947 House of Delegates, covering proposed operating procedure changes in C.P.S., was considered as a part of the C.P.S. agenda. On motion duly made and seconded, it was voted that the Council refer this matter to the Trustees of C.P.S.

Dr. C. L. Cooley, Secretary of C.P.S., then reported on the return of $4.226.56 to the Association out of the monthly appropriation for the first three months of 1947 and estimated that the return for the second calendar quarter would amount to $6.000 or $7,000. He also reported on problems facing C.P.S. in the proposed enrollment of the students at Menlo Junior College and in the attitude of some C.M.A. members. He stated that the Trustees of C.P.S. would meet June 29 to consider these matters.

Mr. W. M. Bowman reported that as of July 1, 1947, C.P.S. enrollment in the commercial program would be more than 500.000. For May, 1947, new enrollments totaled 43.000, over 35.000 of which came from the Southern California territory.

Mr. Paolini, auditor for C.P.S., then distributed the audited annual report of C.P.S. and reviewed it, answering questions.

20. *Committees:*

(a) On motion duly made and seconded, the Council approved the Chairman's selection of Councilors Shipman (chairman), Lum and MacLean as members of the Auditing Committee.

(b) Decision was deferred on the selection of an alternate to Dr. Donald Cass, Delegate to the A.M.A., to fill a vacancy.

(c) On motion duly made and seconded, it was voted to name the standing Committee on Technical Societies and Affiliated Groups as a liaison committee to meet with a similar committee from the California State Nurses Association.

(d) On motion duly made and seconded, it was voted that the standing Committee on Hospitals and Dispensaries be named to meet with an appropriate committee of the California Hospital Association in regard to the Hill-Burton Hospital Construction Bill.

(e) On motion duly made and seconded, it was voted that the Association president name a committee to meet with the State Department of Public Health to consider problems in connection with a possible increase in the incidence of poliomyelitis. President Cline named this committee as Donald D. Lum, chairman, Alameda; Harold Crowe, Los An-

geles; Sam J. McClendon, San Diego; Edward B. Shaw, San Francisco, and Otis Whitecotton, Oakland.

(f) On motion duly made and seconded, Dr. Carroll Andrews of Sonoma was voted as the Association's chairman of Rural Health Service, to work with an A.M.A. committee of which Dr. Frank Doughty of Tracy is regional director.

21. *Cancer Commission:*

At the request of the Cancer Commission, it was regularly moved, seconded and carried that $3,000 be appropriated toward the annual salary of a medical director to serve both the C.M.A. Cancer Commission and the American Cancer Society.

22. *New and Miscellaneous Business:*

(a) The Chairman read a letter from a colleague in Minnesota, suggesting that stricter requirements be placed on medical licensure in California. It was regularly moved, seconded and carried that this letter be referred to Dr. Frederick Scatena, Secretary of the State Board of Medical Examiners.

(b) It was regularly moved, seconded and carried that a letter referring to the administration of the Crippled Children's Act be referred to Dr. Jessie Bierman of the State Department of Public Health.

(c) The chairman reported a request from an official of the State Department of Public Health that the Association cooperate with the department in establishing a system of blood banks within the present framework and budget of the department. On motion duly made and seconded, the chairman was authorized to activate a blood bank committee previously appointed and to authorize it to work through physicians already active in community blood bank programs.

(d) Dr. Cline brought up the question of renewing efforts to enact a Basic Science Law in California. On motion duly made and seconded, it was voted that the Council Chairman appoint a committee to study this question. The chairman named as a committee a representative of the deans of the five medical schools in California (to be chosen by said deans), Drs. Dwight H. Murray, John W. Cline and E. Vincent Askey.

(e) It was regularly moved, seconded and carried that the Association become an Association Member at $200 annually of the information service inaugurated by Marjorie Shearon, Ph.D., of Washington, D. C.

23. *Time and Place of Next Meeting:*

It was agreed that the next meeting be held at the call of the Chairman, in Los Angeles about the end of September.

Adjournment.

EDWIN L. BRUCK, M.D., *Chairman*
L. HENRY GARLAND, M.D., *Secretary*

Minutes of Executive Committee Meeting

TENTATIVE DRAFT: MINUTES OF THE 203RD MEETING OF THE EXECUTIVE COMMITTEE, CALIFORNIA MEDICAL ASSOCIATION

The meeting was called to order by Chairman Shipman at the Family Club, San Francisco, at 6:30 p.m., May 22, 1947.

1. *Roll Call:*

Present were President Cline, President-Elect Askey, Speaker Alesen, Council Chairman Bruck, and the chairman, Sidney J. Shipman, Chairman of the Auditing Committee. Ex-officio member present, L. Henry Garland, Secretary-Treasurer. Present by invitation were Executive Secretary Hunton and Legal Counsel Hassard.

2. *Time of 1948 Annual Session:*

Secretary Garland reported that the dates of April 5-8 or April 12-15, 1948, were available for the 1948 Annual Session. On motion duly made and seconded, it was voted that the 1948 Annual Session be held from April 12 to April 15, 1948, in San Francisco.

3. *Employment of Executive Secretary:*

Chairman Shipman reported that the Council, in executive session on May 3, 1947, had suggested that the Executive Secretary be placed under a three-year contract, subject to renegotiation for renewal at some time prior to its terminal date. This was discussed and the Executive Secretary expressed approval of the contract terms, requesting that the salary increase be made at the rate of $2,000 per annum. At this point the Executive Committee went into executive session, Messrs. Hunton and Hassard retiring. On motion duly made and seconded, it was voted that the Executive Committee recommend to the Council that the salary of the Executive Secretary be increased $2,000 per annum for each of the next three years and that a contract for his services for that period be drawn up by legal counsel.

4. *Compensation of Legal Counsel:*

The committee discussed the extra services demanded of legal counsel during legislative sessions, over and above the services upon which the annual retainer fee is based. It was pointed out that the legislative services of legal counsel are increasing with each legislative session and that this work throws an extraordinary burden on legal counsel. Upon motion regularly made and seconded, it was voted that the committee recommend to the Council that the retainer fee of Peart, Baraty and Hassard remain at the present level and that legal counsel be requested to render a statement for extarordinary services rendered in connection with the Association's legislative activities.

5. *California Tuberculosis & Health Association:*

The chairman reported that some officials of the

California Tuberculosis & Health Association had been disturbed by a letter sent to county society secretaries under date of May 17, 1947, by Secretary Garland under instructions from the Council. He urged that the Association work more closely with the California Tuberculosis & Health Association. After discussion it was agreed that the Chairman of the Council should proceed with the appointment of a liaison committee authorized by the Council and that this committee be instructed to work toward the elimination of differences in the programs of the two associations.

6. *Reprints of Original Article:*

A request from the Council on Medical Service of the American Medical Association for 3,500 reprints of an article in the April, 1947, issue of *California Medicine*, for distribution throughout the country was presented. The article was written by Doctor John W. Cline and entitled "Public Relations of a State Medical Society." Upon motion duly made and seconded, it was voted that the Association provide the reprints requested.

7. *Agricultural Workers Health and Medical Association:*

A letter from Doctor J. Frank Doughty was presented, urging that medical care to the California Agricultural Workers Health and Medical Association be provided through California Physicians' Service. It was agreed that this suggestion merited further consideration and that additional facts be ascertained prior to presenting this matter to the Council.

8. *Public Policy and Legislation:*

Mr. Hassard reported on several pending legislative items and requested authority to handle certain situations in the light of current developments. Such authority was granted.

Adjournment.

In Memoriam

Babcock, Lewis George. Died in Pasadena, June 5, 1947, age 52, following a long illness. Graduate of the College of Physicians and Surgeons, Los Angeles, 1921. Licensed in California in 1921. Doctor Babcock was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

✠

Bolinger, Hugh J. Died in Lodi, June 28, 1947, age 59, of a heart attack. Graduate of Rush Medical College, Illinois, 1913. Licensed in California in 1914. Doctor Bolinger was a member of the San Joaquin County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

✠

Gagnon, Arthur Louis. Died in San Diego, March 26, 1947, age 73, of coronary thrombosis. Graduate of Rush Medical College, Illinois, 1900. Licensed in California in 1921. Doctor Gagnon was a Retired Member of the San Diego County Medical Society and the California Medical Association.

✠

Gocher, Thomas Edmund Peachey. Died in San Rafael, June 22, 1947, age 56. Graduate of the University of Toronto Faculty of Medicine, Ontario, 1915. Licensed in California in 1923. Doctor Gocher was a member of the Marin County Medical Society, the California Medical Association, and the American Medical Association.

✠

Nixon, Albert Crombie. Died in Los Angeles, June 15, 1947, age 59. Graduate of the University of Western Ontario Medical School, London, 1914. Licensed in California in 1922. Doctor Nixon was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

✠

Smith, Stephen Herbert. Died in Pasadena, June 3, 1947, age 67, of coronary thrombosis. Graduate of the University of Michigan Medical School, Ann Arbor, 1905. Licensed in California in 1907. Doctor Smith was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

NEWS and NOTES

NATIONAL • STATE • COUNTY

ALAMEDA

Dr. John H. Lawrence, associate professor of medical physics on the Berkeley campus of the University of California and a pioneer in atomic medicine, at the invitation of the British Institute of Radiology delivered the annual **Mackenzie Davidson Memorial Lecture** of the Institute in London, July 17. He received a Davidson Medal, an annual award.

Dr. Milton H. Shutes, editor of the Bulletin of the Alameda County Medical Association, has written a biography of the late **Dr. William S. Taylor**, pioneer physician of the Livermore Valley, which was published in the May issue of the Bulletin. It was compiled from information secured by Dr. Shutes on a recent visit to Livermore where he interviewed persons who knew Dr. Taylor, as well as from histories and the files of medical journals.

KINGS

Tularemia was reported last May in specimens of three ground squirrels (C. beecheyi) which were collected on a ranch near Hanford in **Kings County**, the California State Department of Public Health reports. This was the first time, the Department's report said, that rodent tularemia had been demonstrated in Kings County.

Specimens were obtained by members of the Sanitary Inspections Section of the Division of Environmental Sanitation, and were analyzed in the department's laboratory.

LOS ANGELES

Dr. Roy O. Gilbert has been appointed Health Officer of Los Angeles County. He had been serving in that capacity as Acting Health Officer since July of last year, following the resignation of Dr. H. O. Swartout.

University of California Extension, in cooperation with the School of Medicine of the University, will offer an early fall group of medical **refresher courses**, beginning the latter part of September. Classes will meet on the Los Angeles campus of the University once a week for 12 weeks, with the exception of a class in Pediatrics, which will meet once a week for six weeks. The following courses will be included: Medicine, General Surgery, Cardiology, Dermatology and Syphilology, Otorhinolaryngology, Gynecology, Urology, and Pediatrics.

Included among well-known medical men who will lecture for these courses will be a number of University of California Medical School professors, nine specialists from various parts of the United States, one from Sweden and one from Mexico City.

Applications for enrollment are available from University of California Extension, Los Angeles 24, California.

SAN FRANCISCO

Dr. J. C. Geiger was elected chairman of the San Francisco Chapter of the National **Foundation for Infantile Paralysis** at the annual meeting of the board of directors in June. Physicians included on the board of directors are: Dr. Harold K. Faber, Dr. Le Roy C. Abbott, Dr. Edward B. Shaw and Dr. H. E. Thelander.

YUBA-SUTTER-COLUSA

Dr. Joseph E. Tillotson, for the past ten years medical director and chief surgeon of Memorial Hospital, left in July for London to take an advanced course in the use of radium and x-ray in the treatment of tumors and allied diseases. Dr. Tillotson has been granted a year's leave of absence.

GENERAL

The International College of Surgeons, United States Chapter, will hold its 12th Annual Assembly in Chicago, September 28 to October 4, 1947. The program will include operative and non-operative clinics, demonstrations, symposia, forums, medical motion pictures, exhibits and the formal dedication of the new library and permanent home of the United States Chapter. Copies of the program and detailed **information may be obtained** by writing Max Thorek, M.D., 1516 Lake Shore Drive, Chicago.

The American Congress of Physical Medicine will hold its 25th annual scientific and clinical session September 2-6, at the Hotel Radisson, Minneapolis. Scientific and clinical sessions will be given September 3, 4, 5 and 6. All sessions will be open to members of the medical profession in good standing with the American Medical Association. In addition to the scientific sessions, the annual instruction courses will be held September 2, 3, 4 and 5. These courses will be open to physicians and the therapists registered with the American Registry of Physical Therapy Technicians. **For information** concerning the convention and the instruction course, address the American Congress of Physical Medicine, 30 North Michigan Avenue, Chicago 2, Illinois.

A tumor record registry on a voluntary, pilot basis in selected California hospitals was inaugurated July 1 by the Chronic Disease Service of the California Department of Public Health. Endorsed by the Cancer

Commission of the California Medical Association, the program will be carried out in consultation with the commission.

Purposes of the registry are to:

1. Determine the extent of cancer morbidity in the State.
2. Permit statistical-epidemiological studies.
3. Supply leads for clinical and laboratory research.
4. Facilitate follow-up of patients.
5. Evaluate therapy and the cancer control program.
6. Furnish information of value for professional and lay education.

The **American College of Allergists** has announced that its annual Fall Graduate instructional Course in Allergy will be given in Cincinnati, November 3-8, inclusive, under the auspices of the Medical College of the University of Cincinnati. Forty-six formal lectures are listed on the program, and in addition there will be a special allergy clinic of case presentations. An added feature this year will be three informal discussion groups led by various members of the faculty. The course presents a comprehensive study of the entire field of allergy—covering the fundamentals, special allergies, specific diseases, and all modern methods of treatment. The course is designed to be of benefit to the general practitioner and specialist who anticipates treating his own allergic patients, as well as to those especially interested in allergy.

Programs and **complete information** can be obtained by writing to Dr. Fred W. Wittich, 423 La Salle Medical Building, Minneapolis 2, Minnesota.

Dr. William C. Menninger, Chief Consultant in Neuropsychiatry to the Secretary of War, and Secretary of the Menninger Foundation, Topeka, Kansas, was made President-Elect of the **American Psychiatric Association** at the annual meeting of the Association.

Dr. Menninger was a brigadier general and wartime Chief Consultant and Director of the Neuropsychiatry Consultants Division in the Office of the Surgeon General. He received the Distinguished Service Medal for his work in the Army and the first Lasker Award in November, 1944, for his contributions to the field of mental hygiene.

Dr. R. R. Spencer resigned July 1 as Chief of the **National Cancer Institute** of the U. S. Public Health Service and was succeeded by Dr. Leonard A. Scheele, formerly Assistant Chief of the Institute. Dr. Spencer will continue to work with the Institute. He said that in resigning he was "shedding the constantly increasing load of administrative duties in order to spend full time on the two phases of the cancer program that interest me most—professional education and research."

INFORMATION

San Francisco County Medical Society Replies to Request for "Economies" in Treating Compulsory Insurance Patients

Indication of what may be expected in the operation of a compulsory medical service plan by a political body when funds fall short of requirements is given in a letter by the Medical Director of Health Service System, to which employees of the City and County of San Francisco are compelled to belong as a condition of employment.

The letter, which was sent to physicians treating City-County employees under the plan, asked that they withhold certain services so that the costs of diagnosis and treatment could be held within the Health Service System's income. Taking note that the System recently had been unable to pay doctors the full amount of fees agreed upon, the Medical Director said that only through reducing the service to patients could the fees be returned to their former level.

In a reply to that letter, the San Francisco County Medical Society forth-rightly stated what is probably the attitude of Medicine generally toward this sort of "economizing" to increase fees at the expense of patients' health.

Editorial treatment of the Health Service System letter and the reply by the County Medical Society was given by the San Francisco News.

Pertinent excerpts from both letters, and the editorial comment by the News, follows:

"Let me place before you," the Medical Director said in his letter, "some figures so that you may realize the manner in which our bills have stepped up:

"An increase in total medical expense for February 1947 over the same month of the previous year is 36 per cent.

"During the same period the increase in membership was 6 per cent.

"The increase in the number of units of doctor services was 38 per cent.

"Office calls for February 1947 increased 20 per cent over the same month of 1946.

"Hospital expense was 87 per cent higher than for February 1946. This is due to substantial increases both in total days of hospitalization used and in the cost per patient-day while in the hospital.

"X-ray cost for ambulatory patients has increased 65 per cent in March 1947 over March 1946.

"Increase in clinical laboratory expense for ambulatory patients was 34 per cent in March 1947 over March 1946.

"During this period there has been no endemic of disease in the city and no unusual epidemic of any disease. The membership in the Health Service System has not increased perceptibly during the year."

As to the reasons for the increase and what to do about it, the Medical Director's letter had this to say:

"The Health Service System members have contributed to this great increase by demanding too much medical service. People in general have more knowledge now on medical subjects gained from magazines, public lectures, and from over the radio; also from quack advertisements in the newspapers. Much of the so-called medical knowledge gained in this way has given them a mass of false information. It has brought about many unnecessary visits to the doctor to get treatment for trivial things. Such minor ailments could be treated as well by their home remedies as by the doctor. Such needless calls take up the doctor's time and add a great expense for the System.

"I appeal to the physician to give our System his help in this matter. It can be done by explaining to the patient that he should not apply for treatment for such minor ailments and that it will not be necessary for him to return for treatment for this simple thing.

"The members themselves as well as the doctors are to blame for the no doubt thoughtless increased cost of clinical laboratory and x-ray expense. The people in general know little about the results that can be obtained from the help of the laboratory tests or the x-ray examinations. Please, doctor, turn such requests aside; explain to them that when needed you will have the examination made.

"In this regard I now make an earnest appeal to the doctors to limit their laboratory tests and x-ray examinations to just what is necessary to make a diagnosis. It would seem that any physician, after taking a short history of his patient's case and making a routine examination in his office, or in the home, will find that he can make a diagnosis without leaning so much upon the laboratories and the x-ray departments. In making a survey of the results of several hundred such examinations, particularly as regards the x-ray, because I have in the histories the reports from the x-ray laboratories, I feel safe in saying that between 50 and 60 per cent of them are unnecessary. The survey of the G-I series and the barium enema examinations revealed that these were negative in nearly 75 per cent of the cases.

"This request also applies to the patients you have in the hospitals. It is true that some laboratory work must be done to comply with the hospital rules, but it should not be necessary to order the many labo-

ratory tests or x-ray examinations that would contribute nothing to the diagnosis and add greatly to the expense of our hospital bills.

"Every patient in the hospital is costing the Health Service System over $13 a day. The average ward rate is $9 a day but when the patient is in the hospital our System pays all the laboratory and x-ray charges as well as for the use of the operating room and the anaesthetist's fee. Within the last few months we have had an average of thirty-one patients a day in the hospitals. This has made our hospital bills excessive in the extreme. It is all very well for municipal hospitals and for university hospitals which are teaching schools, gathering statistics for the records, to make such thorough physical examinations of their patients, filling many pages of histories with the physical findings and laboratory tests for the benefit of their students and the records of the college. The members of the Health Service System, except in a few obscure cases, do not need any such extensive work."

Then, taking up the question of hospitalization and charges for diagnostic study of problem cases, the letter continues:

"Within the last six months doctors have gotten into the habit of hospitalizing Health Service System members for conditions that could be treated in the office or in the home. This is wrong and puts our System to an outstanding unnecessary expense. Sending patients to the hospital under benefits of the Health Service System must have the permission of the Medical Director. In many instances this is not being done. The first notification we receive is a notice from the hospital the next day of the patient's admittance.

"Hereafter no patient, except in an emergency case, will be entitled to hospital benefits under Health Service System coverage until authorization has been given by the Medical Director.

"The so-called diagnostic study of problem cases has always been one of contention. For this service our System pays fifteen units, and allows the regular fee of $10 for necessary laboratory tests and $15 for required x-ray examination if the patient is open for these benefits. Permission must be requested of the Medical Director to make this study. Such requests are being made far too frequently in the last few months. I have reviewed the histories the doctors have submitted on many such cases and have given special attention to the summing up of the conclusions that the internists have made and it is my opinion that very few cases are *problem* cases requiring such a study and such an expense.

"The question, then, is, what is a problem case requiring such a work-up? The answer can be given in the doctor's own definition, as stated in the fee schedule of the C.P.S.: 'Complete history and physical examination on authorization of the Medical Director and only in cases with *obscure* diagnostic problems!'

"Sending patients to the hospital to make a diagnostic study is against the rules of the Health Service System, but recently this is frequently being done and without authorization. It is true that the patients may be in the hospital only three or four days but during that time they have been given all the x-ray and laboratory tests that the hospitals have to offer and these at the expense of the Health Service System. This cannot continue except in certain special cases and on authorization of the Medical Director."

MEDICAL SOCIETY'S REPLY

In reply, the San Francisco County Medical Society:

"The San Francisco County Medical Society, as your Board should be fully aware, cannot countenance nor condone any attempt to influence its members to deny adequate medical care to the sick or injured.

"We, therefore, cannot permit to go unchallenged the highly questionable letter sent out by your Board, through your employed medical director, Dr. Alexander S. Keenan, to doctors who are members of the professional staff of the Health Service System of San Francisco. . . .

"In this astonishing letter to the doctors who care for the thousands of city employees insured under the Health Service System, the management of the System, pleading that the plan is in financial difficulties, bluntly calls on the doctors to lower the quality of medical care provided, and to limit laboratory tests, x-ray examinations and normal diagnostic procedures.

"This medically unethical plea is advanced by your Board, through its agent, on the basis that the System has been losing money, even though it recently increased its rates to its employed members 21½ per cent, and dropped the unit value paid to doctors in March by 20 per cent.

"Only by economizing at the expense of their patients, the doctors are flatly told, can they expect to have their fees returned to the former level, or escape future reductions.

"In effect, this letter from your Board is a confession that the Health System, as now operated, is actuarially unsound and cannot keep its commitments, unless the doctors will accede to your demand to cheapen the quality of medical care and deny city employees the same high standard of care provided other patients.

"The Board of Directors of the San Francisco County Medical Society formally and vigorously protests this attempt by your Board to deny adequate medical care to the thousands of city employees, and members of their families, insured under the Health Service System.

"The doctors of San Francisco will not gamble with the health of their patients to improve their own fee schedule, nor will they be parties to any bureaucratic experiment in cheap, assembly-line medicine. . . .

"Some of the amazing recommendations made by your management to the doctors who are members of the professional staff of the Health Service System would turn back the clock in medicine a hundred

years—and it is almost unbelievable that your Board would seriously advance such suggestions.

"For example, we ask that you re-consider this paragraph in your ill-considered, four-page letter:

> 'People in general have more knowledge now on medical subjects gained from magazines, public lectures, and from over the radio; also from quack advertisements in the newspapers. Much of the so-called medical knowledge gained in this way has given them a mass of false information. It has brought about many unnecessary visits to the doctor to get treatment for trivial things. Such minor ailments as could be treated as well by their *home remedies* as by the doctors. Such needless calls take up the doctor's time and add a great expense for the System.'

"The San Francisco County Medical Society, the California Medical Association, the American Medical Association, our university medical schools, the insurance industry and scores of splendid lay organizations have worked for years to promote public health education—and now your Board advises that we tell the people who come in for treatment or diagnosis that they would be just as well to dose themselves with home remedies. If that unenlightened advice was followed, we wonder whether your Board would accept responsibility for the 'minor illnesses' which had fatal consequences, due to faulty self-diagnosis.

"Again, your letter appeals to doctors to 'limit their laboratory tests and x-ray examinations,' and then proceeds with this specious attempt at justification:

> 'It would seem that any physician, after taking a short history of his patient's case and making a routine examination in his office, or in the home, will find that he can make a diagnosis without leaning so much upon the laboratories and x-ray departments.'

"We wonder if any one of the Board members, when his wife or child was ill, would want either to have that kind of 'routine examination.'

"But then your Medical Director goes on to say:

> 'In making a survey of the results of several hundred such examinations, particularly as regards the x-ray, I feel safe in saying that between 50 and 60 per cent of them are unnecessary. The survey of the G-I series and the barium enema examinations revealed that these were negative in nearly 75 per cent of the cases.'

"Let's turn that statement around. Apparently from 40 to 50 per cent of the examinations were 'necessary'—and if 75 per cent of the cases, in the latter category, were negative, it follows that 25 per cent were positive!

"What type of medical practice do you think we would have if we failed, due to false economy, to make proper diagnosis in 50 per cent of the cases—or in 25 per cent? Is that the kind of health service you promised the city employees when they were insured under your System? Are you willing to get up before them and defend that type of medical care? We don't believe it.

"Your management also complains of rising hospital costs and has a ready if dangerous remedy—less hospitalization!

"That is not an acceptable answer to doctors who have the welfare of their patients at interest. If the Health Service System cannot provide adequate hospital care for its insured members, it should, in all fairness, so advise the city employees—and not ask doctors to go against their own medical judgment in refusing hospitalization to their patients, when the health, or possibly even the life of the patient, may depend on the decision.

"In view of the acute shortage of hospital facilities, it is absurd for your Health Service Board to argue that doctors are hospitalizing patients who do not require it. We have great difficulty in finding hospital beds even for patients who are critically in need of hospital care.

"There is much more that is wholly untenable and unacceptable in the instructions and suggestions which have been sent to the doctors by your Board, but we will not attempt to deal with each issue specifically in this letter, as it is clearly evident that fundamental changes must be made in the operation of the Health Service System if a complete break down is to be averted.

"Whether you recognize it or not, and we believe that you must, the Health Service System, as now constituted, is actuarially unsound and cannot continue to provide the benefits which it has guaranteed its members. No self-respecting doctor, with pride in his profession, will be a party to your program to treat city employees as 'second class patients' to enable your Board to try to bolster a System which is basically unsound.

"As you will recall, the San Francisco County Medical Society, for years past, has warned your Board that the Health Service System was being operated in defiance of accepted actuarial and insurance principles, and has repeatedly recommended that changes be made to place the System on a sound basis. . . .

"We believe your Board, rather than attempting to bolster an unsound System by the wholly impractical and medically dangerous expedients set forth in your letter . . . should frankly tell the city employees that the present plan has failed.

"We believe that you should then state that you wish an expression of opinion from them as to whether an insurance-indemnity System should be established, or whether a contract should be entered into with one or several of the established voluntary health systems to provide the necessary coverage. . . ."

EDITORIAL COMMENT

The *San Francisco News*, in an editorial:

"An ill-conceived letter from the medical director of the city employees' compulsory health service system addressed to the doctors participating in the plan furnished the County Medical Society with a perfect opportunity to blast compulsory health in-

surance. The society's letter, made public yesterday, did the job with completeness and finesse. As a result, the cause of universal health insurance has been done serious harm.

"The medical director's letter appealed to the doctors to reduce the amount and quality of service rendered to beneficiaries of the plan—a preposterous suggestion—regardless of the fact that costs of the service have mounted enormously. Obviously the system itself, finding its operations running into heavy weather, should have modified its services to correspond with its income and thus kept itself actuarially sound. No physician could tolerate an appeal to lower standards of the profession's practice.

"An appeal did go out to beneficiaries of the system, as well as to the doctors. That move was justifiable, on the ground that the beneficiaries have a mutual interest in keeping service at the highest possible level for serious illness and can help guarantee that by not demanding too much service for minor sickness.

"This crisis in the health service system, it appears to us, could have been avoided by application of more business judgment, foresight, and attention to public relations as well as by stricter observance of the rules. If the system is in such dire straits as the medical director's letter implies, the appeal that went out to both the medicos and the members comes at a very late hour. We cannot but wonder why the critical situation was allowed to develop without remedial action much earlier."

Hawaii Physicians Defeat Political Medicine Proposals

Methods used effectively by organized medicine in Hawaii in defeating measures for political distribution of medical care in the Territory, and steps taken to guard against the passage of such legislation in the future, are reported by the National Physicians Committee for the Extension of Medical Service.

"During the past three months," the Committee reports in an Informational Bulletin, "the most serious threat for the introduction of the political distribution of medical care occurred in the Territorial Legislature of Hawaii. Had this legislation been enacted, it would have introduced in the United States a precedent with far-reaching implications and results.

"In 1945 the territorial legislature passed a joint resolution creating a Hospital Services Study Commission. This Commission filed a voluminous report at the beginning of the 24th session of the Legislature on February 19, 1947. On the basis of this report two compulsory sickness insurance bills were introduced in the lower house of the Legislature. Bill 747 was identical with the suggested bill in the report of the Study Commission. Bill 941 was a more comprehensive plan for sickness insurance.

"The latter bill found favor with the members of the legislature who were politically indebted to the labor unions.

"In order to defeat the two proposals the Territorial Medical Association engaged in a very intensive public relations program which included the following phases:

1. A series of conferences was held with each of the major business associations, religious and educational organizations, to alert these groups concerning the full implications of compulsory sickness insurance.
 Culminating this series of meetings, fifty leading business men of the Islands were brought together for a lengthy conference, and by formal resolution agreed to support the position of medicine against the enactment of the proposed legislation.
2. Radio was used extensively to interview community leaders and to demonstrate to the general public that the compulsory sickness insurance plan was inimical to the best interest of the community. Many of the leading personalities of the Islands appeared on these radio programs.
3. At frequent intervals during the legislature advertising space was purchased in the newspapers to explain the profession's point of view. In addition, considerable editorial space was obtained and a steady stream of letters to the editor in opposition to this legislation appeared in the newspapers.
4. Constant contact was maintained with all friendly members of both houses of the Legislature, and particularly with the members of the Committee on Public Health.
5. A number of physicians prepared critical analyses of the legislation and delivered scores of talks before civic, religious, educational and business groups.

PUBLIC HEARINGS

"On April 24 public hearings on House Bills 747 and 941 were held by the Committee on Public Health. Contrary to all expectations the proponents were able to muster only three witnesses to testify in favor of the legislation, while eleven witnesses testified against the proposal and many others were prepared to do so had the hearings been extended.

"As a result of the intensive activities of the professions and the strong showing made during the public hearings, the Committee on Public Health pocketed both Compulsory Sickness Insurance Bills.

"During the last days of the session, which adjourned on May 3, the proponents made an effort to secure passage of a concurrent resolution to extend the Hospital Study Commission until the next session of the Legislture. This proposal was also defeated.

LONG RANGE PUBLIC RELATIONS PROGRAM

"The Territorial Medical Association has now established a long range public relations program. This program will be adequately financed by an annual assessment on the members of the Association and includes all phases of a sound public relations policy."

BOOK REVIEWS

Rh . . . ITS RELATION TO CONGENITAL HEMOLYTIC DISEASE AND TO INTRAGROUP TRANSFUSION REACTIONS. By Edith L. Potter, M.D., Ph.D., Assistant Professor of Pathology, Department of Obstetrics and Gynecology, The University of Chicago and the Chicago Lying-In Hospital. Year Book Publishers, Inc., 304 S. Dearborn St., Chicago. Price $5.50.

At last we have in handbook form a complete review and abstract of the essential material on the subject of the Rh factor and its clinical importance in hemolytic disease of the newborn, intra-group transfusion reactions, and the whole problem of the isoimmunization of pregnancy. The author, Dr. Edith L. Potter, is eminently qualified to bring balance and sanity to a subject which has been unnecessarily confused and muddled by artful and artless fancy. An unusual feature of the book is its authoritative and complete analysis of the pathological import of hemolytic disease of the newborn. Doctor Potter has made many pertinent contributions to this subject and she is a recognized authority in the field. Another fine feature is the exhaustive bibliography, alphabetically arranged and covering more than 800 references.

Doctor Potter is not only a pathologist, but she holds an active appointment in the clinical field of Obstetrics at the University of Chicago. Therefore her experience with diseases of the newborn extends from the bedside to the post-mortem table.

The early chapters of the book deal with the discovery of the Rh factor, its biologic and immunologic properties and its role in the pathogenesis of transfusion reactions and hemolytic disease of the newborn. This material is well presented and expressed with great simplicity. The part of the volume that deals with technical applications of the problem is again very well organized and designed to answer the usual questions proposed by the clinician. Doctor Potter finds space to discuss some of the phases of the prevention of hemolytic disease of the newborn, including moral, philosophic, and biologic aspects of the subject. She appends simple rules for avoiding unnecessary immunization. On the subject of prevention, she discusses the use of blocking antibody, purified haptenes, agglutinin absorption, typhoid and pertussis vaccination, and the weighty problem of the early induction of labor. Included in this section are notes on the subject of artificial insemination. There is a short but adequate chapter on treatment. There also is included a section dealing with the technical data encountered in the laboratory, and very good photographs of the details and technique of the Rh agglutinin test. Throughout the volume the reader is impressed by the scientific accuracy and honesty of the reviewer and the gentle humor of her criticism which to the reader might have been more profitable had it been more harsh. The book could have been made more valuable had this eminently qualified author given more of her own conclusions rather than the controversial ones of much less qualified workers in the field.

I hope that the next edition will contain a more complete Table of Contents, a fault not of the author but of the publisher, since the author made provision for extensive indexing by including topical headings of each new subject within the text of each chapter.

* * *

ALLERGY IN THEORY AND PRACTICE. By Robert A. Cooke, M.D., Sc. D., F.A.C.P., Attending Physician and Director of the Department of Allergy, the Roosevelt Hospital, New York City. 572 pages, with 43 illustrations. Philadelphia and London: W. B. Saunders Company, 1947. Price $8.00.

This book discusses the mechanism, diagnosis and control of most clinical allergy. Cooke properly decries too great dependence on skin testing. His question about the role of histamine in the allergic reactivity, his inability to benefit urticaria or chronic asthma or increase tolerance for histamine with histamine therapy and his disapproval of hapamine coincide with the idea of many allergists. Most alergists will disagree, however, with this exclusive use of intradermal tests and the unnecessary standardization of extracts by the protein nitrogen unit rather than by weight (Noon unit). General experience, moreover, shows that bronchial asthma in all ages is due to food and inhalant allergy, occasionally to drug allergy and rarely to bacterial allergy, to which Cooke gives great importance. Sinal surgery to remove hyperplastic membranes as a source of assumed bacterial allergy is rarely if ever required when food and inhalant and rarely bacterial allergies are controlled. His use of opiates, barbiturates and even demoral and paraldehyde in asthma will receive general disapproval.

Allergists will not agree with his idea that allergic dermatitis is never due to wheal-producing food and inhalant allergens as in hay fever. His cited cases of contact allergy to foods, drugs and chemicals fail to prove this mechanism as the usual cause.

Cooke discusses urticaria and angioneurotic edema and probable clinical allergy in the gastrointestinal tract, nervous tissues and eyes. In general food allergy is not sufficiently recognized due to his failure to use trial or elimination diets properly for adequate periods of time. The experience of many physicians, moreover, will refute the statement that "this matter of allergy diets is a much overrated fad."

Spain's discussion of bronchial asthma due to ingested foods and drugs will receive general approval. Harkavy's chapter on cardiovascular allergy should be studied by all internists and allergists, particularly that arising from tobacco and bacterial allergies. Waltzer offers helpful suggestions about

skin testing and describes indirect testing which he originated.

Finally, Cooke confirms the failure of vitamin C to benefit allergy and decries the tendency to attribute true manifestations of allergy to psychosomatic causes.

* * *

BACTERIOLOGY. Laboratory Directions for Pharmacy Students. By Milan Novak, Ph.D., M.D., Professor and Head of the Department of Bacteriology and Public Health, University of Illinois, Colleges of Medicine, Dentistry and Pharmacy, Chicago, and Esther Meyer, Ph.G., Ph.D., Assistant Professor of Bacteriology and Public Health, University of Illinois Colleges of Medicine, Dentistry and Pharmacy, Chicago. Second Edition. 1947. The C. V. Mosby Company, St. Louis.

This laboratory manual is designed to present the important aspects of medical and sanitary bacteriology in 36 periods. The experiments are somewhat less elaborate than those usually arranged for medical students. The manual should be quite satisfactory as a laboratory guide for the study of bacteriology by students of pharmacy.

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THE PREMATURE BABY. By V. Mary Crosse, M.D. (London), D.P.H., M.M.S.A., D.R.C.O.G., Chief Obstetric Officer in charge of City of Birmingham Maternity Homes and Premature Baby Unit. With Foreword by Leonard G. Parsons, M.D., F.R.C.P., F.R.C.O.G. With 14 illustrations. 1946. The Blakiston Company, Philadelphia.

This little volume of 142 pages discusses prematurity and its management with the clarity and certainty that only years of personal experience can give. This experience was gained at Birmingham City premature Baby Ward in England. Obstetrics in England is practiced quite differently than in this country, with many more home deliveries and much more work done by midwives. The management of premature births is, therefore, a somewhat different problem than in this country, but the simplicity of the organization and the excellent results obtained under such management are indeed a comfort about which to read. The book covers, without a waste of words, the characteristics of newborns, as well as the problems of maintaining temperature, oxygen, feeding, complications due to prematurity infections, etc.

The book is very explicit and should be of value to physicians, especially those practicing in small towns and rural areas. It can, however, be read with profit by pediatricians, house officers and nurses. A problem studied in another country often leads to somewhat different conclusions than those generally accepted in one's own medical environment and this always presents a challenge to look objectively at our traditional practices in order to re-evaluate them.

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THE 1946 YEAR BOOK OF OBSTETRICS AND GYNECOLOGY. Edited by J. P. Greenhill, B.S., M.D., F.A.C.S. The Year Book Publishers, Inc., Chicago. Price $3.75.

The latest issue of Dr. Greenhill's Year Book (1946) carries on the high standards of the previous editions. The literature published in the English-speaking countries has been quite comprehensively surveyed. Many of the more significant articles from South America have been reviewed. The editorial comments integrate the wide expanse of the material covered. The principal topics presented include the role of nutrition in pregnancy, abortion, the toxemias of pregnancy, analgesia and anesthesia in obstetrics, breech presentation, the Rh factor, infertility, operative technique, genital neoplasms, and menstruation and its disorders. Greenhill's work is replete with information for the senior student, the candidate for examination before the State or National Board, as well as for the practitioner and specialist in obstetrics and gynecology.

* * *

SEX EDUCATION, A Guide for Parents, Teachers and Youth Leaders. By Cyril Bibby, M.A., M.Sc., F. L. S. Education Officer to the Central Council of Health Education; Senior Lecturer at the College of St. Mark and St. John, London; sometime scholar of Queen's College, Cambridge. Published October 23, 1946. 311 pages. Emerson Books, Inc., New York. Price $2.50.

This book is the American edition of an originally English text. In common with a good many English textbooks, this one is particularly notable for its readability. The whole matter of sex education from early childhood through marriage is discussed with a conciseness and conviction that leaves no room for doubt.

A book such as this can be great help to parents and it is not amiss to remark that some of our own colleagues would profit immensely if they would give some recognition to this too frequently neglected subject.

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Proctology for the General Practitioner*

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IT is not the purpose of this presentation to offer anything new in the field of proctology, but, rather, to review certain common ano-rectal symptoms and their correlation with the evidence of examination in the establishment of correct diagnosis —a requisite for proper treatment.

The average patient is reticent to volunteer to his doctor the intimate details of his bowel habits and his ano-rectal sensations. In most instances he will limit description of his complaints to the simple statement that he has "piles." To accept this diagnosis without further interrogation and proper examination is inexcusable neglect of the responsibilities of the physician to his patient.

There is no single symptom which is pathognomonic of any specific abnormality or disease of the anal canal, rectum, or colon. Certain combinations of symptoms may be sufficiently characteristic to strongly suggest a specific disease, but diagnosis is never certain until it has been established by proper examination.

Discussion will be limited to six common symptoms: external elevations about the anus, protrusions through the anus, anal pain, anal itching, bleeding, and change in bowel habits.

ANAL ELEVATIONS

The differentiation of external elevations about the anus should be relatively simple, since they are readily accessible to direct inspection and palpation. Yet incorrect diagnosis is not uncommon, with resultant inappropriate treatment. External hemorrhoids should be readily recognized as subcutaneous varicosities which distend when the patient strains down. It is important to remember that external hemorrhoids, unless acutely thrombosed, cause no appreciable symptoms. Acute thrombosis produces a painful, tender lump which must be differentiated from a perianal abscess and a sentinel tag. These three common types of painful elevations are not infrequently confused and must be properly recognized in order to initiate appropriate treatment. Acute thrombosis of an external hemorrhoid begins with sudden pain and simultaneous development of a tender lump at the anus. The patient can tell, usually, not only the day but the hour when this occurred. Symptoms reach a maximum intensity quickly, and begin to regress within a few days. In the case of a perianal abscess, pain precedes any evidence of external swelling by hours or days. Symptoms are progressive unless spontaneous rupture of the abscess occurs. A sentinel tag, often incorrectly called a "sentinel pile," is an acute inflammatory elevation of skin distal to a fissure-in-ano. Pain with bowel movements has usually been present for days or weeks before the development of a tender elevation at the anus.

Differentiation between these three conditions should never be difficult on physical examination. Acute thrombosis of an external hemorrhoid produces a sharply localized, firm, rounded elevation, usually with a bluish discoloration, although at times this discoloration may be hidden by edema between the thrombosis and the overlying skin. The usual sites for occurrence of thrombosis are in the two posterior and the right anterior quadrants. The elevation of a perianal abscess is less sharply demarcated, and palpable induration has a less distinct edge. Fluctuation may be present, but is not usually evident until the abscess has reached maturity and is about to rupture through the skin. The overlying skin may or may not show an inflammatory red-

* Read before the Section on General Practice at the 76th Annual Session of the California Medical Association, April 30-May 3, 1947, Los Angeles.

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ness, with none of the bluish discoloration of a thrombosis. Abscesses may occur in any quadrant, within or without the anal verge. A sentinel tag usually occurs in the posterior or anterior midline, most commonly posteriorly. It is a firm, cone-shaped tag of indurated skin, usually with a perpendicular wall on the side of the cone toward the anal canal. Proximal to the tag there will be found an anal fissure.

Treatment of a thrombosed external hemorrhoid may be palliative or surgical. It will always subside, with any form of treatment or with no treatment at all. Surgical excision, not incision, is indicated when this will effect a definite shortening of the period of suffering and disability of the patient. Conservative treatment consists of frequent sitz baths to relieve sphincter spasm and to hasten absorption, and mechanical lubrication to diminish the irritation of friction. For this there is nothing better than plain vaseline.

Treatment of a perianal abscess should be immediate incision and drainage. Delay until fluctuation is present allows further destruction of tissue and increases the probability of subsequent fistula formation. The direction of the incision should be tangential or circumferential rather than radial.

Recognition of a sentinel tag directs treatment to the fissure-in-ano, since the tag is secondary to the fissure.

Other types of external elevations which deserve consideration, but which can only be mentioned in this general discussion, include epithelioma, condyloma acuminata, tuberculosis, chancre, chancroid, furuncle, infected sebaceous gland, and the external opening of a fistula-in-ano.

ANAL PROTRUSIONS

Protrusions through the anal canal from within should be immediately differentiable from external elevations by the fact that these are covered with mucus membrane rather than skin, with one exception. This exception is an hypertrophied anal papilla which has become so large that it everts through the anal canal to the outside. Such an hypertrophied papilla is usually firm and rounded at the tip. It is the result of a low-grade inflammatory process secondary to a chronic anal cryptitis. It is not a precancerous lesion, but can be a source of considerable annoyance to the patient.

Treatment consists of simple amputation, in some instances with simultaneous excision of an associated deep infected anal crypt.

The commonest type of anal protrusion is that of internal hemorrhoids. These are usually seen as quadrant protrusions, containing obvious varicosities, with the covering mucosa almost always showing evidence of ulceration.

Rectal prolapse may be incomplete or complete. Incomplete prolapse consists of protrusion through the anal canal of the mucous membrane of the rectum, while complete prolapse consists of protrusion of all layers of the rectal wall. Differentiation of the two types is readily made by inspection. In simple mucosal prolapse, longitudinal folds radiate outward from the center of the spherical-shaped protrusion. In complete prolapse, the protrusion tends to be oval in shape, with the mucous membrane thrown into circular folds.

A simple and satisfactory treatment for incomplete prolapse is submucosal injection of 5 per cent quinine and urea hydrochloride, or 5 per cent phenol in vegetable oil. Correction of complete prolapse is much more difficult. It is apparent from the great number of surgical procedures advocated that there is no entirely satisfactory method of surgical repair. Many cases of complete prolapse can be adequately corrected by an injection technic in which from 100 to 400 cc. of 1:3000 hydrochloric acid solution is injected into the pelvi-rectal spaces. This produces a fibrous tissue reaction which aids in supporting the rectal wall. At the same time multiple submucosal injections of 5 per cent phenol in oil should be done, with subsequent repetition of the latter procedure whenever there is any evidence of prolapse.

Adenomatous polyp of the rectum and even of the sigmoid may protrude through the anal canal. It is particularly important in the patient who gives a history of anal protrusion but who cannot demonstrate the protrusion at the time of examination, that adequate inspection of the rectum and lower sigmoid be made by proctoscopic examination to rule out this possibility. Such a polyp is a definite pre-cancerous lesion, which should be recognized and removed.

A polypoid carcinoma of the rectum may protrude through the anal canal by direct extension of growth, or by actual prolapse. The importance of recognition in such a case is obvious.

ANAL PAIN

Pain in the region of the anal canal may be due to a variety of conditions which can be differentiated only by suitable examination. The presence of hemorrhoids is not the cause of pain unless acute thrombosis is present. The commonest causes of pain are due to infection originating in the anal crypts of Morgagni. Localized inflammation in these crypts may cause a variable degree of anal discomfort and sphincter spasm. Diagnosis is dependent upon visualization of the muco-cutaneous line by means of an anoscope. Extension of infection from an anal crypt may produce a chronic fissure-in-ano, a perianal abscess, and a fistula-in-ano.

The pain of a fissure-in-ano is brought on by bowel movement and may persist for a few minutes, for several hours, or even until the next bowel movement. Diagnosis is frequently possible by external inspection, particularly when a sentinel tag is evident. Recognition of a fissure in the upper end of the anal canal may be possible only by anoscopic examination.

The pain of a perianal abscess is constant, and unaffected by bowel movement. In the early stage of development an abscess sometimes is not evident upon external inspection or external palpation. An important diagnostic procedure is bi-digital palpation of the perianal tissues, with the index finger

inserted into the rectum and flexed to oppose the thumb outside the canal. Palpation of a deep area of tender induration by this means is indication for prompt incision and drainage.

Pain related to a fistula-in-ano is evidence of inadequate drainage of an area of acute infection somewhere in the course of the fistulous tract. The establishment of adequate drainage is of importance in order to prevent further extension of infection and development of a more complicated fistula. Fistulectomy is necessary for permanent cure.

Less common causes of anal pain include epithelioma, gonorrheal cryptitis, chancre, chancroid, condylomata acuminata, tuberculosis, and sacrococcygeal spasm.

PRURITUS ANI

Itching about the anus is a common symptom, at times of such intensity that it seriously interferes with normal activity and sleep. There are many diverse theories of etiology and methods of treatment. Pruritus ani is frequently discussed as a syndrome, rather than as a symptom. Anal itching is subliminal pain, due to mild stimulation of local sensory nerves. The objective of treatment is to identify the cause of this local sensory stimulation and to remedy it. The cause may be a fungus infection of the perianal skin, or a phytid reaction to some distal focus of fungus infection. Anal cryptitis, a hypertrophied anal papilla, a fissure, or a fistula may be responsible. The presence of hemorrhoids may be a factor, particularly if the protrusion of an internal hemorrhoid into the anal canal results in excessive moisture with resultant maceration and irritation of the skin. Scratching often becomes a significant factor in the persistence or aggravation of a perianal dermatitis.

In our experience, anal cryptitis and perianal dermatitis, the latter quite commonly of fungus origin, are the two commonest causes of pruritus ani. In many hundreds of cases, we have never seen a patient with pruritus ani who failed to show some local abnormality on examination. We have not cured every patient with anal itching. But in every patient in whom it has been possible to eradicate the local cause of abnormal sensory stimulation, itching has been relieved.

BLEEDING

The significance of the passage of blood through the anus cannot be known until the source of such bleeding has been accurately determined. The cause may be transient and trivial, or it may be a threat to life itself. The source may be located in the anal canal or at any level in the gastro-intestinal tract.

Certain features in the characteristics of bleeding are of aid in determining the site of the responsible lesion. The dripping of blood after bowel movement, or unexpected external soiling by blood is usually due to a lesion which is located below the grasp of the sphincter muscle. Associated anal discomfort suggests a lesion distal to the mucocutaneous line, since this line represents the upper limit of sensory innervation. Blood immediately following bowel movement and on the toilet paper suggests a lesion of the anal canal or rectal ampulla. Streaks of blood on the surface of a formed stool suggests a localized ulcerative lesion in the sigmoid or rectum. Mixed blood in an unformed stool may be from any level of the rectum or colon, or from even higher in the intestinal tract.

In general, the passage of bright red blood suggests a lesion distal to the sigmoid, while dark blood suggests a lesion proximal to the rectosigmoid. However, exceptions to this generalization are not infrequent. Profuse hemorrhage from a lesion as far back as the duodenum, with very rapid progress of the blood through the intestinal tract, may result in the passage of blood which is still fresh in appearance. And old dark blood may come from internal hemorrhoids, accumulating in the rectal ampulla after one bowel movement, to be passed with the next movement.

In every patient with bleeding investigation should include a digital, anoscopic, and proctoscopic examination. The mere presence of hemorrhoids should not be accepted as the cause of bleeding without proctoscopic examination to rule out the possibility of ulcerative disease of the rectal mucosa, and particularly to rule out the presence of a polyp or carcinoma. The innumerable instances in which treatment of hemorrhoids has been undertaken in complete ignorance of the presence of a cancer only a few inches away comprise one of the most tragic phases of the war against cancer. It should never be forgotten that cancer is more common in the colon and rectum than in any other organ of the body common to both sexes, except the skin. Fifty per cent of the cancers of the colon and rectum are within reach of the examining finger, and 70 per cent are within reach of a proctoscope.

Benign adenomatous polyps are a frequent cause of bleeding. Such polyps are pre-cancerous lesions. Their discovery before malignant degeneration takes place permits local removal of the lesion, and prevents the development of a cancer.

When anoscopic and proctoscopic examination fails to demonstrate the source of bleeding, or whenever the character of the bleeding is such that a higher lesion is suspected, barium enema examination is indicated. The technic of this examination should be such that it will demonstrate not only the presence of a carcinoma, but of a benign adenomatous polyp. The use of air contrast examination is essential in the demonstration of the majority of polyps of the colon. Even with the best technic, x-ray examination has a diagnostic accuracy of only about 90 per cent. A second and even a third examination is indicated when the clinical evidence points toward a diagnosis of polyp or carcinoma.

Demonstration of lesions proximal to the colon requires x-ray examination by barium meal.

CHANGE IN BOWEL HABITS

A change in bowel habits in any adult should be considered presumptive evidence of malignancy of

the colon until other diagnosis has been established and carcinoma has been ruled out by adequate examination. A diagnosis of "intestinal flu" frequently delays recognition of the presence of a carcinoma for weeks and months. A diagnosis of ulcerative colitis cannot be established without proctoscopic or x-ray examination. The demonstration of diverticulosis by x-ray examination is acceptable as the explanation of disturbance of bowel habits only when the roentgenologist has ruled out the possible presence of a co-existing carcinoma. When change in bowel habits is accompanied by blood in the stool, particular care must be taken to rule out the possible presence of a polyp or of a carcinoma before accepting diverticulitis as the cause of symptoms. Barium enema examination should be repeated if bleeding persists.

CONCLUSION

With any symptom referable to the colon or rectum, the establishment of correct diagnosis by adequate examination is a requisite to proper treatment. Bleeding and change in bowel habits are the two cardinal symptoms of malignancy. Any other diagnosis should be made, in every instance, only after the exclusion of malignancy as the cause of these symptoms by adequate examination.

Blood Protein Depletion in Infantile Eczema*

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IN a study of infantile eczema conducted at the Los Angeles County General Hospital since January, 1941, nutritional crises [27] were observed in infants suffering from severe generalized eczematous involvement. These crises were introduced by a sudden gain in weight (occult or manifest edema), sudden loss in weight (dehydration), apathy and listlessness, anorexia, profuse diarrhea, or actual prostration.

To evaluate this syndrome more completely, routine hemoglobin and albumin-globulin determinations were made upon admission of every infant to the eczema service. These determinations were repeated at weekly intervals until discharge from the hospital.

The incidence of hypoproteinemia was at first startling, then recognized as a frequent complication in a metabolic derangement which regularly included deficient food intake (elimination diets and, or failure of complete absorption) and excessive food loss (allergic diarrhea). The comparative infrequency with which this picture is mentioned throughout the literature and the frequency with which it is encountered with routine determinations furnished the basis for this study.

A brief summation of a few facts concerning protein metabolism aids considerably in a more complete appreciation of the entire picture.

The average blood levels for infants up to three months of age is 5.5 gm. per cent for total proteins, 3.6 gm. per cent for albumin and 1.8 gm. per cent for globulin.[6]

In those from three months to two years of age, average reported levels are 6.2 gm. per cent for total proteins, 4.3 gm. per cent for albumin and 1.9 gm. per cent globulin.

In the premature,[3] blood protein values are even lower. Such apparent globulin deficiency may be hypothecated on a lack of immunologic stimuli and consequently diminished globulin production. This is somewhat substantiated by the increase of globulin values in septic states.

Chronic hypoproteinemia in a group of children without apparent illness was found in Tennessee.[6,17]

Younger children because of their low blood protein levels are reported to show increased susceptibility to illness and to nutritional edema.

Hypoproteinemia may be divided into prehepatic, hepatic and posthepatic varieties. In the prehepatic type there is interference with intake, digestion or absorption of food.

In the hepatic variety there is actual inability of the liver to synthesize protein despite an adequate supply of protein building material. In the posthepatic type there is abnormal loss despite adequate supply and synthesis.

It is generally agreed that the liver [4,9,11,17] is the major source of plasma protein production. Fibrinogen is completely formed in this organ. The reticuloendothelial cell system provides the source of most of the globulin which actually comprises a number of separate fractions.[22] The chief depots of the reticuloendothelial cell system are found in the liver, bone-marrow and skin.

*Read before the Section on Pediatrics at the Seventy-fifth Annual Session of the California Medical Association, Los Angeles, May 7-10, 1946.

The author is indebted to Drs. Wm. Baker and Clark Richardson, residents in pediatrics, for a record of the data taken from the charts studied and later used for the statistical studies made.

Protein levels are described as fluid, maintaining a constant balance among (a) liver, (b) blood, (c) tissue cells.[13] Decreased plasma protein is accompanied by tissue protein depletion. During deficiency states approximately 30 times as much nitrogen is lost from tissue protein as from serum protein.

The forces which tend to retain protein in circulation or cause its return to the circulation are (1) osmotic pressure (determined by albumin, globulin and crystalloid blood content)[1,8,11] and (2) capillary hydrostatic pressure (falls as it proceeds through capillaries, thus provided a differential fluctuating value which in turn produces a state of ebb and flow).

Plasma albumin possesses a relatively small molecule. It contributes most in maintaining osmotic pressure. One gram of albumin will attract 15 cc. water from tissue exerting 5.5 mm. pressue of mercury. One gram of globulin exerts a pressure of 1.4 mm. mercury. Twenty-five grams of albumin is equivalent in osmotic pressure to 420 cc. normal plasma. The total plasma proteins exert an osmotic pressure of 21-29 mm. mercury.[19] The critical edema level has been estimated at:[18,26]

5.5 ± 0.3 gm. serum protein
2.5 ± 0.2 gm. albumin

At this level the capillary hydrostatic pressure exceeds the vascular osmotic pressure with the escape of fluid from the vascular bed causing edema.

For the restoration of plasma protein values, plasma, blood and amino-acids both orally and parenterally and parental liver extracts were employed. Approximately one thousand cubic centimeters of plasma is needed to raise the blood protein one gram per one hundred cubic centimeters. Thus maintaining plasma protein levels solely with plasma would be obviously impractical.[7]

Two commercially obtainable amino-acid mixtures were used. One is stated to be an "enzymic digest of casein and pancreas containing amino acids and polypeptides, with all of the essential amino acids."* This product was used subcutaneously and intravenously. The second which proved more palatable is stated to be a protein hydrolysate "of beef, wheat and milk"† (enzymatic).

Approximately 30 grams of amino acids daily is recommended for children in the intravenous treatment of protein deficiency.[6]

Amino acids deemed necessary to build plasma protein are:[21]

valine	methionine
leucine	tryptophane
isoleucine	histidine
phenylalanine	lycine
arginine	threonine

Although sensitivity is regarded as absent to protein breakdown products below the proteose stage,[2] definite sensitivity was seen in several infants given these preparations by either route.

Growth stimulus or "growth factor" is recognized more easily in proteins which simulate body proteins. Lactalbumin which comprises 60 per cent of human milk resembles body protein closely.[23,24] Vegetable protein has proved half as valuable as animal protein, restoring plasma protein and reducing edema.[12] Gelatin furnishes protein which is deficient in tryptophane[25] and sulfur-containing amino acids but with other incomplete proteins is valuable because of reciprocal supplementation,[16] one supplying what another may lack.

Protein need in the infant is proportionately greater than in the adult because of the increased rate of growth.[6] The amount of protein required depends on its digestibility, availability of amino acids, and its quality (biologic value or the percentage of absorbed nitrogen). Varying digestibility indices have been offered with the following in a descending scale of values: Milk, 98 per cent; meat, 97 per cent; cereal, 85 per cent; legumes, 78 per cent; fruits, 85 per cent; vegetables, 83 per cent.

Human milk contains less protein than cow milk but because of a high lactalbumin content less is needed for growth. Two to two and one-half grams of human milk protein per kilogram of body weight, as compared with two and a half to three and a half grams of cow milk protein per kilogram, are required for optimum nutrition. Actually the amount of cow milk usually used in routine formulas ranged between three and a half to four and a half grams of protein per kilogram per day (one and a half to two ounces of milk per pound of body weight per day).[14]

The protein of human milk supplies about nine per cent of the daily caloric intake. The protein of cow milk, because of its lactalbumin deficiency, must be fed in larger quantities and should supply about 16 per cent of the caloric intake when fed in optimum amounts.

It has been suggested that liver extract and vitamin B parenterally will raise the vitamin A absorption level in the blood.[15]

Because of the low vitamin A absorption in infantile eczema[5] which partially accounts for the increased susceptibility of these infants to upper respiratory infections, such therapy was initially offered to a few of the infants studied. Increased growth increment, longer intervals of freedom from infection and more easily maintained protein balance occurred so regularly that in the protein deficient group where nutrition was at its poorest this therapy was made routine from the time of admission to discharge. Whether there was an original liver dysfunction which aided in the production of a secondary hypoproteinemia or whether the hypoproteinemia produced liver dysfunction—parenteral liver therapy seemed indicated.

Hemoglobin values were originally requested with each plasma protein determination to assess hemoconcentration and to ascertain whether blood or plasma was to be used in therapy. Hematocrit values have since been added to the routine procedure as a more accurate index of hemoconcentration. Even with such determinations, it is conceivable that in an anemic hypoproteinemic infant who is considerably dehydrated, hypoproteinemia might be completely

*Amigen—Mead-Johnson & Co.
†Aminoids—Arlington Co.

masked by an elevated hematocrit and a normal protein reading.

The body favors hemoglobin formation over plasma protein restoration,[20] possibly because of the normally higher percentage of hemoglobin as compared with plasma protein and because plasma proteins furnish a portion of the precursor substances for the production of hemoglobin. Throughout the series of infants observed, protein fortification was pursued until both hemoglobin and plasma protein values returned to fair levels and the infant "appeared well."

The use of milk substitutes was discovered whenever protein deficiency was present, because of the increased incidence of nutritional crises which tended to occur when milk was removed from the dietary. The increased incidence of crises on milk-free regimes is partially explained by the fact that cystine is relatively high in lactalbumin and is also a key amino acid in plasma protein production. When it was absolutely necessary for such withdrawal, more frequent parenteral liver extract appeared to aid in maintaining a progressive weight gain.

Edema is a secondary manifestation of hypoproteinemia and was observed in our series both as occult (sudden increase in body weight) and manifest (obvious swelling of portions of the body).

Infections with suppuration cause a post-hepatic hypoproteinemia. The estimated range of loss has been stated as:

8.1—21.00 grams per hundred cubic centimeters total protein.
4.6—11.5 grams per hundred cubic centimeters of total albumin.

Infection also reduces the protein regenerating ability of the liver and may even alter the permeability of the capillaries, thus enhancing the possibility of edema. Whole blood is better than plasma when infection is present because it also aids in combating the disease process.[22]

Vitamin therapy is of importance in protein metabolism. Vitamins B-1 and C deficiencies may complicate hypoproteinemia. Vitamins A and B deficiencies have been reported as productive of an eczematoid dermatitis.

The picture of protein deficiency in the infant typically includes:

1. Anemia
2. Failure to gain
3. Lowered resistance to infection
4. Flabby musculature
5. Deficiency of plasma proteins possibly productive of edema.

THERAPY

Liver extract 0.5 cc. (7.5 units) to six months and 1 cc. every six months of age intramuscularly twice weekly.

Vitamin B complex 1 cc. intramuscularly twice weekly.

Intravenous plasma once weekly when total blood protein values fell into range 5.5 - 6.0 gm.: twice weekly when values were below 5.5 gm.

Intravenous blood was alternated with plasma when hemoglobin values were low.

One tablespoon twice daily of hydrolyzed amino-acid mixtures were included in daily dietary.

Diet eliminations were followed as summarized in another paper.[27]

PROCEDURE OF EXPERIMENT

A random sample of 54 cases of infantile eczema (38 boys and 16 girls, all 91 days of age or over at time of admission) was studied to determine the percentages of deficiency. The following percentages were found:

Albumin	.25 ± .058
Globulin	.37 ± .066
Total Protein	.26 ± .060

STATISTICAL INTERPRETATION

The cases showing protein deficiency were examined to find (1) whether albumin or globulin showed a greater per cent of deficiency, (2) which of the two proteins was restored first and by how much. The results are shown in Table 1.

TABLE 1—*Comparison between albumin and globulin deficiency on basis of percentage of deficiency and number of days from time deficiency was noted until recovery.*

PERCENTAGE OF DEFICIENCY FROM NORMAL*

	Albumin	Globulin	Total Protein
Number of cases	13	20	14
Median	0.12	0.21	0.11
First quartile	0.05	0.11	0.05
Third quartile	0.22	0.25	0.20
Quartile range	0.17	0.14	0.15
Mean	0.16±.04	0.21±.02	0.15±.03
Standard deviation	0.15	0.10	0.13
Difference between means	0.05		
Standard error of the difference of two means	0.047		
Level of significance	0.310		

NUMBER OF DAYS TO RECOVERY

	Albumin	Globulin	Total Protein
Number of cases	11	20	14
Median	36.0	13.5	24.0
First quartile	21.0	8.0	8.8
Third quartile	69.0	38.3	54.5
Quartile range	48.0	30.3	55.7
Mean	45.7±9.2	24.3±5.2	36.6±8.4
Standard deviation	30.4	23.2	31.4
Difference between means	21.4		
Standard error of the difference of two means	10.53		
Level of significance	0.074		

* Normal grams per 100 cc. of blood; albumin 2.3, globulin 1.9, total protein 6.2.

(1) These results indicate that there is a tendency for the globulin fraction to show a greater percentage of deficiency from normal than the albumin. Both the median and the mean for globulin deficiency as a percentage of normal are higher than for albumin. On the other hand, both the quartile range and stand-

ard deviation indicate that the data is extremely variable. This high degree of variability in each of the small samples is reflected in the standard error of the difference between the two means of .047. This is about as large as the difference between the two means of .05. The high degree of variability produced a level of significance of .31. In short, 31 samples out of 100 picked at random from the same universe would show a difference as great as or greater than that shown between the per cent of albumin and globulin deficiency. The difference between albumin and globulin deficiency is not significant. A larger sample is necessary to draw reliable conclusions concerning this aspect of protein deficiency.

(2) Findings indicate quite conclusively that globulin deficiency is dissipated faster than albumin deficiency. The standard deviation is .67 of the mean for albumin and .95 for globulin. The difference between the means is significant as indicated by a level of significance of .074. This indicates that in only 7.4 pairs of samples out of a hundred taken from the same universe would differences as great as that shown appear.

DISCUSSION

The incidence of protein deficiency in a random sample of infantile eczema cases averages 26 per cent. The comparatively greater depression of globulin values is interesting in the designation of body tissues most affected, viz., the reticulo-endothelial cells with large depots in the skin and liver. This in turn points out a therapeutic approach in at least correcting the deficiency state.

The high incidence of protein deficiency makes it imperative that blood protein values be routinely investigated in the study and therapy of infantile eczema whether such work is conducted in the office or in the hospital.

The age range of the infants studied was not selected but represented the group when first admitted to the Los Angeles County Hospital eczema ward. With the exception of three other protein deficiencies, all infants studied fell into this range. A similar group of private cases almost wholly fell into the age range of under 90 days. This group will be reported in another paper. Findings, however, apparently do not materially differ from those here presented.

Knowledge of such striking protein deficits has aided and will aid in eliminating deaths occurring in previously described nutritional crises.

Work done to the present time merely emphasizes the need for more intensive and complete investigation.

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The Blalock Operation for Congenital Pulmonary Stenosis*

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BLALOCK and Taussig in May, 1945, introduced a shunt, or by-pass operation for the treatment of the most frequently encountered type of congenital cardiovascular defect accompanied by cyanosis. This defect goes under the term "Tetralogy of Fallot" and is characterized by pulmonic stenosis or atresia, interventricular septal defect, dextroposition or overriding of the aorta, and right ventricular hypertrophy.

Subsequent communications by Blalock [2,3,4] have demonstrated the extreme value of the shunt operation in the management of those congenital cardiovascular defects where there is an inadequate flow of blood to the lungs. In addition, Blalock has demonstrated that one of the branches of the aortic arch can usually be connected to a pulmonary artery without encountering insuperable difficulty; that cyanotic children withstand anesthetization and temporary occlusion of one pulmonary artery; and finally, that the subclavian artery can be divided within the thorax and the collateral circulation to the arm remains adequate.

Taussig and Blalock emphasize two important diagnostic criteria in establishing the diagnosis of insufficient pulmonary blood flow. These are (1) roentgenographic evidence that the pulmonary artery is diminutive in size and (2) clinical and roentgenographic evidence of absence of congestion in the lung fields. Another clinical point worthy of note is that the heart is either normal in size or relatively small in cases of the tetralogy of Fallot.

Dr. Blalock mentions methods developed by Dr. Richard Bing by which blood flow through the pulmonary arteries, and systemic blood flow, can be determined with a fair degree of accuracy. These methods have been of diagnostic value in the doubtful cases. We have not had the opportunity to do any blood gas analyses at the University of California Hospital but have relied heavily upon Dr. Earl Miller of the Radiology Department. Dr. Miller has perfected the technic of angiocardiography to a high degree of accuracy and we consider diodrast cardiograms an essential part of the work-up of each patient that is a possible candidate for the Blalock operation.

Blalock states that the preferable age for his shunt operation is from three to ten years. He prefers an end to side union of the subclavian artery to one of the pulmonary arteries. The subclavian branch of the innominate artery is the vessel of choice since this vessel makes a less acute angle with its parent artery after the anastomosis is performed. The thoracic incision is made on the side opposite to that on which the aorta descends. The aorta descends on the right rather than the left in approximately one patient in five. The innominate artery arises on the side opposite to that on which the aorta descends.

Recently Potts [5] and his group have advocated anastomosing the aorta to the left pulmonary artery employing an ingenious clamp that occludes only a portion of the aortic lumen. The chief advantages of Potts' operation are that the size of the shunt can be accurately determined and, in addition, a union between the aorta and the pulmonary artery would in all likelihood be technically simpler and more likely to function in patients past 20 years of age than the one in which the subclavian artery is used. When a patient has attained most of his growth the gap to be bridged is greater in proportion to the length of the artery.

We have adopted the use of the water manometer to measure the pulmonary artery pressure as advocated by Dr. Blalock. The pulmonary artery pressure is always measured at the operating table if the artery appears abnormally large or is pulsating. Blalock states the pulmonary artery pressure is below 240 mm. of water in the great majority of his cases. In addition, Blalock believes an anastomosis is probably inadvisable if the pulmonary artery pressure is greater than 300 mm. of water.

Twenty-eight cases are being reviewed in this communication. All the patients were operated upon at the University of California Hospital and it was our opinion they had a reasonable chance of being benefited by the Blalock operation. The length of time of observation since operation extends from 14 months to one month; the last operation in this group was performed on the 28th of March, 1947.

Table I shows the sex and age of the patients at the time of operation. More recently the Blalock procedure was performed on a patient (male) of 35 years of age and early observation indicates that this patient will receive considerable benefit from the operation.

Table 1.—*Blalock Procedures*

Number of cases:	
Females	12
Males	16
Total Cases	28
* * *	
Patients observed from 14 months to 1 month postoperative:	
Oldest in group	30 yrs.
Youngest in group	5½ mo.
Age of patients at time of surgery:	
0– 3 yrs.	11
3–10 yrs.	11
10–20 yrs.	5
30 yrs.	1

* Read before the Section on General Surgery at the 76th Annual Session of the California Medical Association, Los Angeles, April 30-May 3, 1947.

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Table II designates the appearance time of cyanosis. It will be noted that in seven of the patients cyanosis appeared first in from a few days to four months after birth. It is possible the cyanosis that appeared in this particular time period may have followed the spontaneous closure of the ductus. The late appearance of cyanosis in the two older patients is rather to be expected since individuals living to this age must, of necessity, have less pulmonary stenosis than the younger individuals that require hospitalization in the early years of life.

Table III outlines the reasons for not doing the shunt operation in six cases. Figure 1 is the artist's drawing of the anomalous vessel found in Case 1 of this group. This vessel arose from the aorta and functioned as a patent ductus. There was no pulmonary artery take-off from the right ventricle. The anomalous vessel functioning as a patent ductus was temporarily occluded on the operating table but the heart would fail in a matter of 15-20 seconds and accordingly the operation was terminated without any attempt to add more blood to the pulmonary arteries as there was sufficient blood going to the lungs through this anomalous vessel.

TABLE II

Cyanosis First Noted:	
At birth	12
From birth—4 mos.	7
4 mos.-5 yrs.	9*

* Cyanosis appeared in the patients aged 20 and 30 years at 5 years and 2 years, respectively.

TABLE III

Total cases explored	28
Total cases receiving shunt	22

Reason for no shunt in 6 cases:

1. 7½-year-old male—anomalous vessel from aorta recognized at surgery. (Expired 6 hours P.O.)
2. 4¾-year-old female—anastomosis could not be done—heart stopped each time right pulmonary artery was occluded. (Expired 5 hours P.O.)
3. 7-year-old male—early case, pulmonary artery appeared normal size—did not measure pressure or size of vessel. This patient, perhaps needed operation.

	Pulmonary artery pressure	Size†	Sex	Age
4.	760 mm. saline	19 mm.	M	4½ yrs.
5.	370 mm. saline	25 mm.	M	2½ yrs.
6.	500 mm. saline	15 mm.	F	5½ mo.*

* This patient died a few hours P.O. Heart would fail each time right pulmonary artery was occluded. Postmortem revealed transposition of great vessels, two intraventricular defects; small patent ductus.

† Diameter of pulmonary artery as measured by calipers at operating table.

The case of patient 2, Table III, represented a complete atresia of the pulmonary artery take-off: a small patent ductus was the only conduit by which blood could reach the lungs for aeration. There was an ante mortem thrombus in the left pulmonary artery hence each time the right pulmonary was temporarily occluded, the heart would begin to fail.

Cases 4, 5, and 6, Table III, all represent abnormally high pressures in the pulmonary system and probably would have received no improvement from the Blalock operation. It is quite possible in case 6 (Figure 2), that there was a reversal of flow through the patent ductus as this shunt, plus the interventricular septal defects, were the only connections between the greater and lesser circulatory systems.

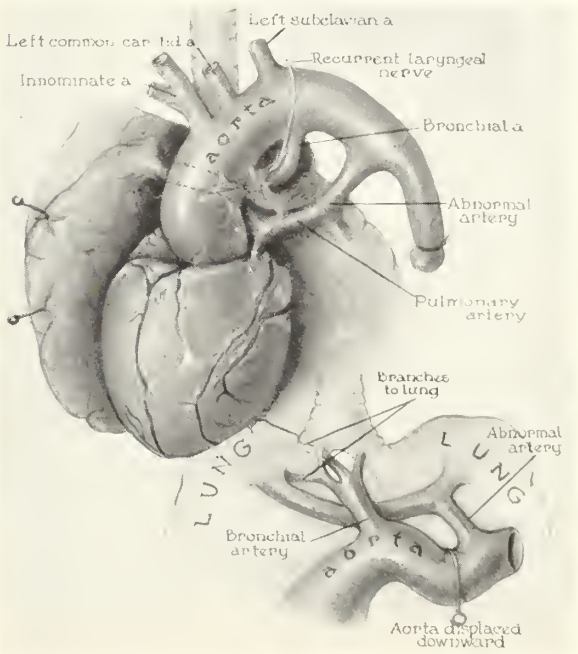


Figure 1.—Additional description of this case is in the text (Case 1, Table III). This anomaly could probably be classified as a truncus arteriosus with enlarged bronchial arteries.

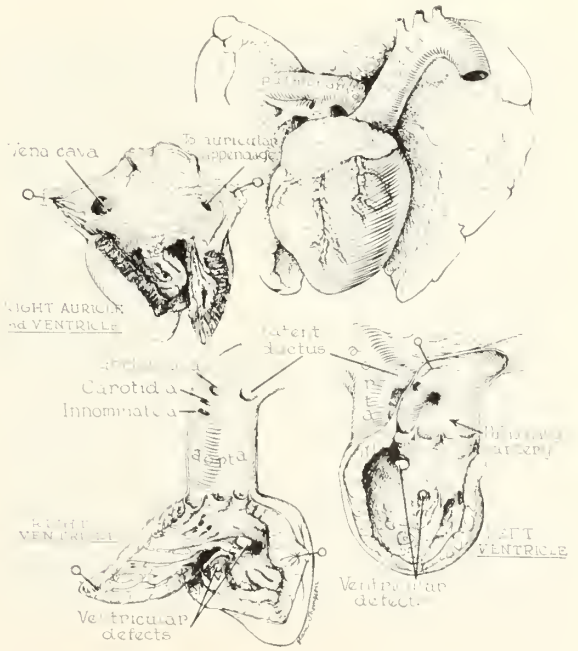


Figure 2.—Case 6, Table III. Complete transposition of the great vessels with a patent ductus arteriosus.

All the patients in the group have had preoperative diodrast cardiograms (Figures 3 to 7) studies and electrocardiographic tracings. The diodrast cardiograms are not unequivocal but they give valuable information particularly as concerns the degree of cross chamber mixing and overriding of the aorta. The electrocardiograms characteristically shows right ventricular hypertrophy in a very high percentage of the cases with pulmonic stenosis.

Table IV, shows the number of times the different



Figure 3.—(a) Left lateral oblique diodrast cardiogram. S—Superior vena cava, A—Aorta, P.A.—Pulmonary Artery, R.V.—Right Ventricle, L.V.—Left Ventricle (these abbreviations will be used throughout cardiograms.) The overriding is poorly shown in oblique film, much better demonstrated in Figure 3(b). Note the absence of cross chamber filling.

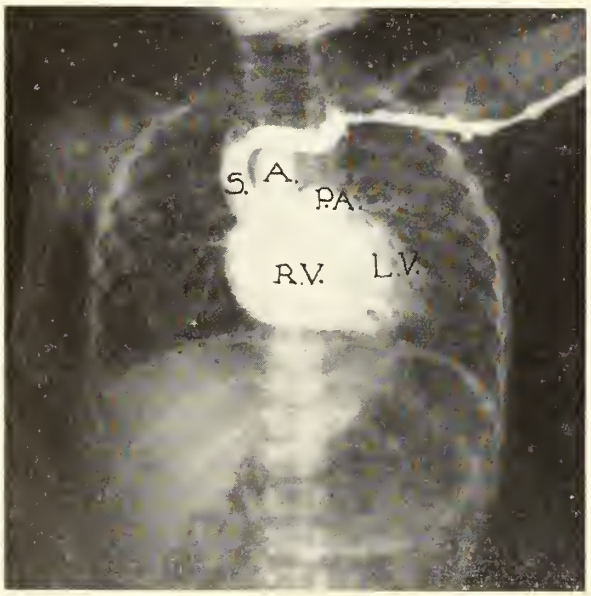


Figure 3.—(b) Antero-posterior cardiogram of same patient as Figure 3(a). The aorta is descending on the right side. The aorta fills at the same time as the pulmonary arteries. The left ventricle remains relatively empty.

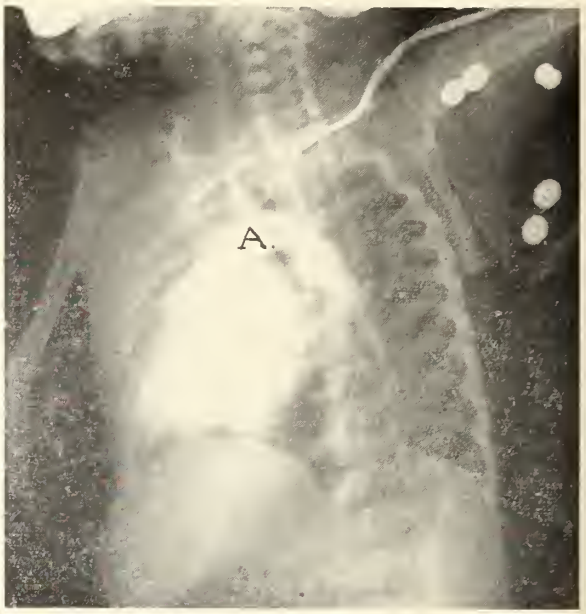


Figure 4.—The pulmonary arteries are not visualized. Necropsy showed complete atresia of the pulmonary artery at its origin. The flooding of the entire heart with diodrast resulted from the presence of an interventricular septal defect and a single, common ventricle. The diodrast cardiogram is of the heart of patient 2, Table III.

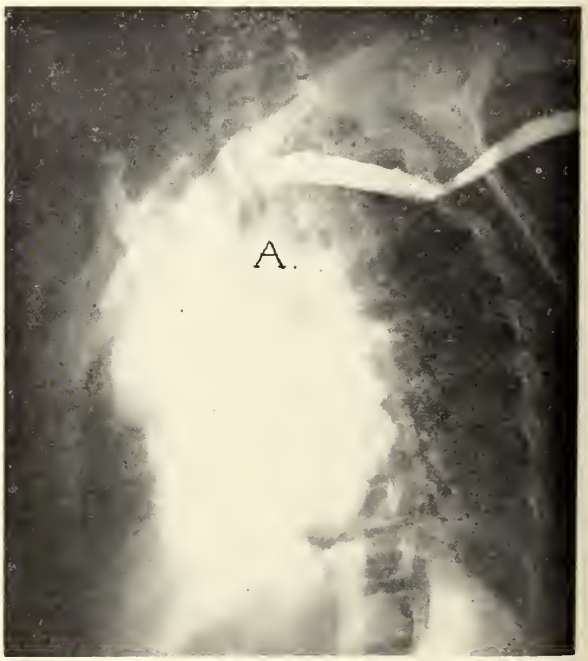


Figure 5.—Pulmonary arteries poorly shown. There is overriding of the aorta. (This latter vessel fills at the same time as the pulmonary arteries.) There is marked cross chamber filling yet this patient was greatly improved by the Blalock operation.

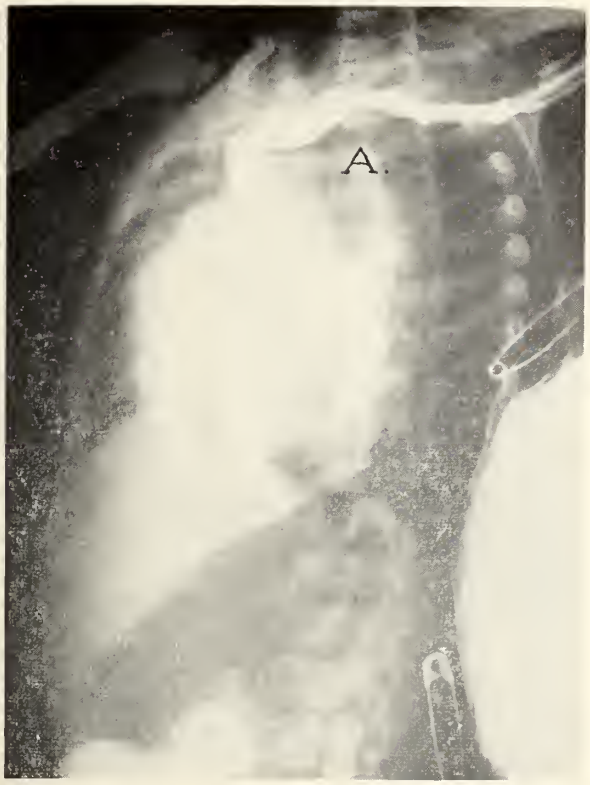


Figure 6.—There appears to be overriding of the aorta. The pulmonary arteries are poorly shown, yet the pressure in the right pulmonary artery in this patient was 760 mm. of water and no shunt operation was carried out.

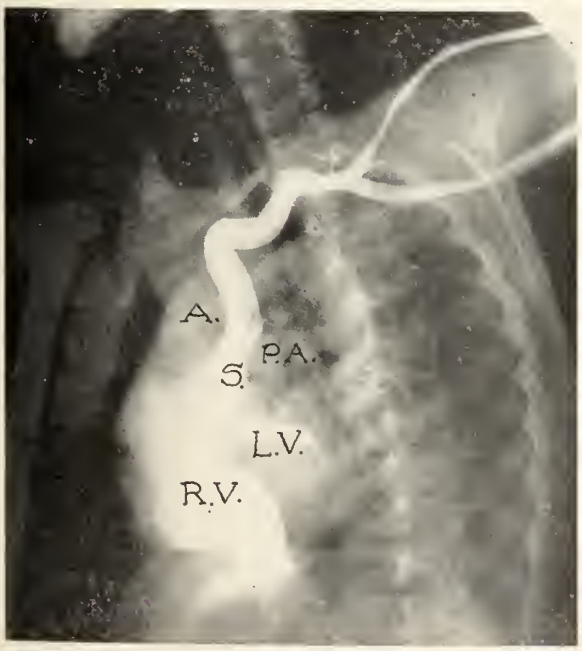


Figure 7.—Diodrast cardiogram of Case 1, Table III (drawing of heart and great vessels shown in Figure 1.) All of the blood leaving the right heart is carried by the aorta. The pulmonary arteries are supplied by the anomalous vessel from the descending aorta (probably an enlarged bronchial artery).

vessels that arise from the aortic arch were utilized. The carotid vessels were employed too frequently but as we have accumulated operative experience we rarely use any vessel other than the subclavian artery. Blalock emphasizes the importance of not interfering with the cerebral blood supply whenever it is technically possible.

TABLE IV.—*Vessels Utilized*

Right innominate	1
Right carotid	5
Right subclavian	5
Left carotid	2
Left subclavian	8
Division of both left subclavian and left carotid	1

Additional measurements of the pressure within the pulmonary artery (mm. of saline) and the width of the pulmonary artery are given in Table V. Figure 8 shows very well how the pulmonary artery may be large in caliber yet the amount of blood transported to the lungs be insufficient because of a stenosis proximal to the pulmonic valve.

TABLE V.—*Measurement of Pulmonary Artery*

Age	Pressure	Diameter
30 years	190 mm.	15 mm.
7¾ years		10 mm.
3 years		10 mm.
4 years		10 mm.
17 months		8 mm.
20 months		7 mm.
11 years	20 mm.	15 mm.

Table VI shows the total number of deaths in this group of patients. These figures compare favorably with those presented by Dr. Blalock.

TABLE VI.—*Mortalities*

	Total Deaths
22 Patients receiving shunt	1
6 Patients receiving no shunt	3
	4 (14+%)
Anastomosed group	4.5%

The postoperative complications are listed in Table VII. The only permanent complication was probable complete paralysis of the recurrent nerve (unilateral, on the operative side) in two patients. This complication occurred in the male aged 30 and indicates the difficulty of the dissection in the older age group, particularly in the freeing of the subclavian artery distally to the branching of this vessel.

Chylus thorax appeared in a boy of 2½ years of age, in whose case the approach had been right sided. Several taps were required but finally the fluid was completely absorbed one month following operation with no other treatment than the chest aspirations.

The numbness in the hand on the side on which operation was done occurred in the 30-year-old patient. Although annoying, this symptom is not

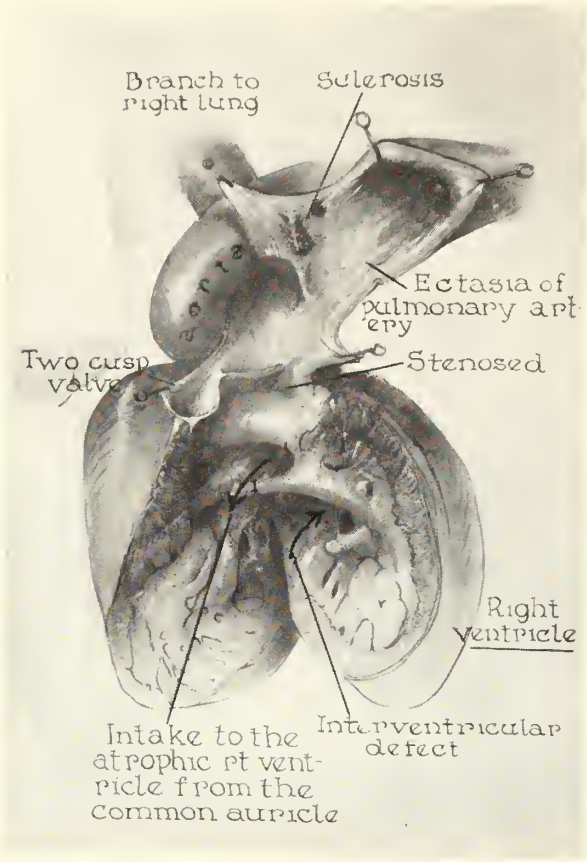


Figure 8.—This drawing is from a necropsy specimen. Note the marked ectasia of the pulmonary artery distal to the atresia. A large pulmonary artery in the diodrast cardiogram does not necessarily contraindicate the Blalock operation.

TABLE VII.—*Postoperative Complications*

Permanent hoarseness	2
Postoperative intrapleural bleeding (Spontaneous cure after 5 days)	1
Horner's syndrome (Both disappeared before leaving hospital)	2
Numbness in hand on operative side	1
Chylous thorax	1
Cranial irritation (Twitching of hands)	1

(17-month-old female, 2nd postoperative day, relieved by removal of 120 cc. of blood from left femoral vein.)

disabling and probably is the result of division of the subclavian artery.

The cranial irritation that occurred in one patient was immediately relieved by the withdrawal of 120 cc. of blood after a cut down on the common femoral vein. Hydration is carefully watched in all these patients: fluids are given by mouth until four hours before the operation. Normal saline solution is administered intravenously by slow drip during the operation. Fluids are continued parenterally during the immediate postoperative period until the patient is able to take by mouth at least 1500 cc. daily (young age group).

Table VIII outlines the number of instances of right sided aorta and the results in the 22 cases receiving the shunt.

TABLE VIII

Right Sided Arch		
Total cases having right sided aorta		9*
Cases in which x-ray failed to establish diagnosis (or was of no help)		2
Results in 22 Cases Receiving Shunt		
Deaths		1
Continuous audible murmur present		16
Excellent result	14	
Good result	2	
Continuous audible murmur not present		5
Excellent result	1	
Good result	1	
Fair result	2	
Poor result	1	

* All 9 cases received shunt operation.

The incidence of right sided arch is higher than in Dr. Blalock's larger series (one in five in Blalock's series). The x-ray department could not be certain that the aorta was descending on the right side in two of these nine cases. We now know that the diodrast cardiogram in the antero-postero projection will unequivocally demonstrate whether the aorta is descending upon the left or right side of the thorax.

The one death occurring in the group that received the shunt operation was that of a female 4¾ years of age. The heart stopped three times during the operation but the anastomosis between the right common carotid and the right pulmonary artery was accomplished. The patient expired a few hours after surgery. Necropsy revealed a pronounced infundibular pulmonic stenosis. Had the patient survived, she should have received considerable benefit from the operation.

A continuous murmur is audible in 16 of the 21 patients who have survived the Blalock procedure. When last examined a continuous murmur could not be elicited in five patients. The results are all excellent or good in those cases where a continuous murmur is audible. It would appear some blood is passing through the shunt in four of the five patients that do not have a continuous murmur since there has been some improvement in four. The patient classified as a poor result is the 17-month female who suffered from cerebral irritation during the postoperative period and was greatly improved by the removal of blood from the femoral vein. We intend to reoperate upon this patient, this next time on the contralateral side and probably anastomose the aorta to the left pulmonary artery.

Figures have not been presented to show the marked reduction in red blood count, hemoglobin and hematocrit that follows the Blalock operation. Reduction in these determinations is constant when the operation is successful and the anomaly corrected is a true pulmonic stenosis. We have observed the red blood cell count drop from 8.9 million to

4.67 million (per cmm. of blood) in six days following the shunt operation. (This particular patient lost very little blood at the time of surgery or during the postoperative period.)

SUMMARY

The purpose of this communication has been to present the results in 28 patients who have undergone exploratory thoracotomy with the intention of performing the Blalock operation if feasible.

The gratitude of both patient and parents that follows the successful completion of the Blalock operation has been a great thrill and stimulus to those of us who have treated the patients embodied in this report. The Department of Anesthesia at the University of California Hospital has played an important role in the successful completion of operations already presented.

The contribution of Dr. Alfred Blalock and Dr. Helen Taussig has been justly accredited by the leaders of our profession throughout our country. The greatness of the contribution of these two doctors can possibly be better expressed by the following words written by the mother of a child who has had the benefit of Blalock and Taussig's contribution: "There are no words to express our feelings of gratitude and happiness for making it possible for our little boy to be well and happy and able to play as other children."

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Simplified Intestinal Intubation with Miller-Abbott Tube

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THERE is still a lack of standardization in methods of intestinal intubation with the Miller-Abbott tube. The following steps and use of an outside balloon on the inflation portion of the tube have served to simplify this procedure:

1. Test the balloon for leakage and capacity and measure roughly the distance from nose to pylorus on the outside of the body. (Figure 1.)
2. Insert the tube into the stomach. Immobilize the tube by taping it to the upper lip, allowing several inches of slack in stomach. (The markings will be between the 75 centimeter and one foot mark on the tube at the nose.)
3. Insert 10-15 cc. of water and 4-5 cc. of air into the balloon in the stomach and attach a second balloon to the outside inflation end of the tube. Elevate the patient's trunk and head slightly and encourage him to lie on the right side for intervals. Also, ask the patient to think about his favorite foods in an effort to excite psychic digestion. (Figure 2.)
4. In cases of obstruction, suction is started. In preoperative cases where the tube is being installed prior to right colectomy procedures, a nonresidue diet is continued without suction.
5. When the balloon in the stomach passes into the pylorus or duodenum, the water in the inside balloon is displaced through the inflation portion of the tube and will be observed in the outside balloon. If suction is being used, bile colored material will be seen in the suction bottle. The metal bucket's position may be checked by x-ray examination. (Figure 3.)
6. The distal end of the tube is proven by the above evidence to be in the duodenum. Then, by gentle squeezing of the outside balloon, the water is dis-

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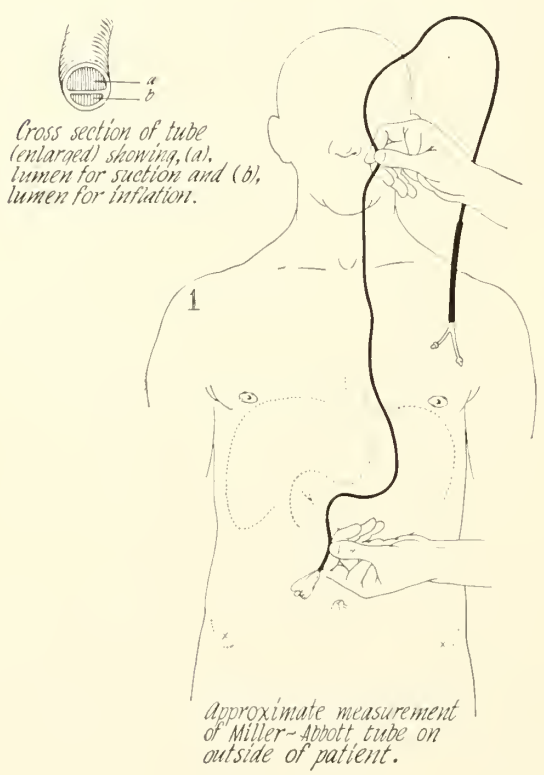


Figure 1

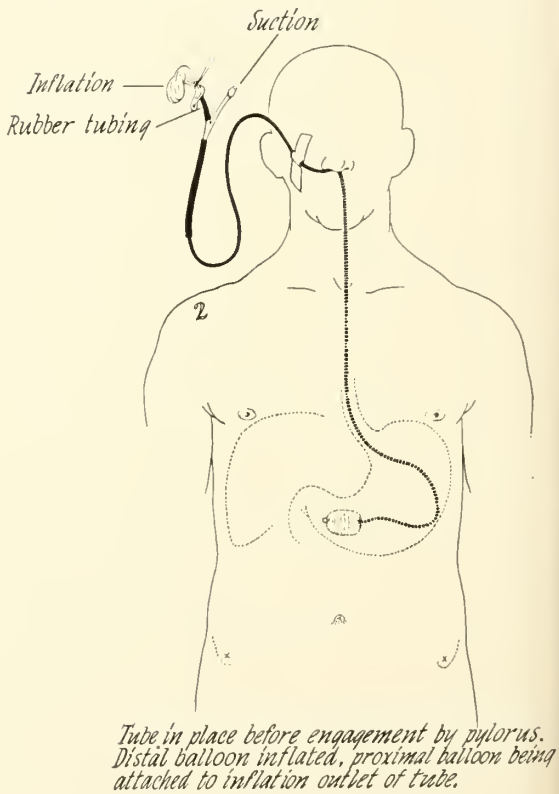


Figure 2

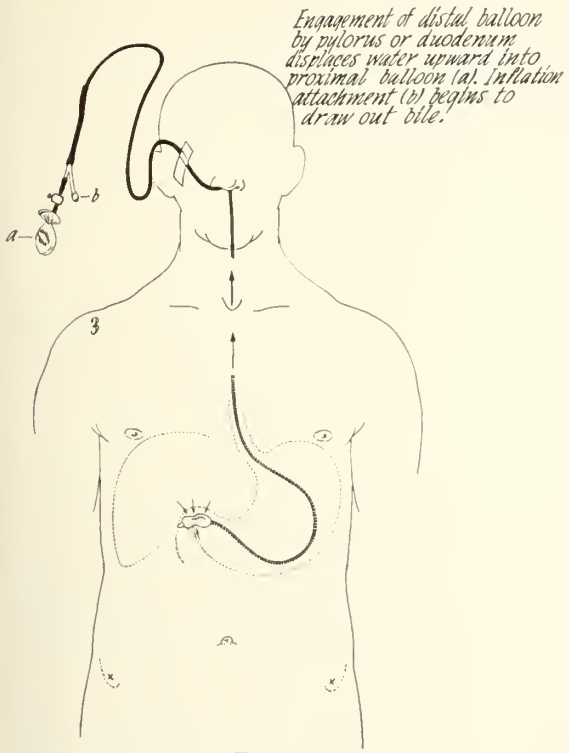


Figure 3

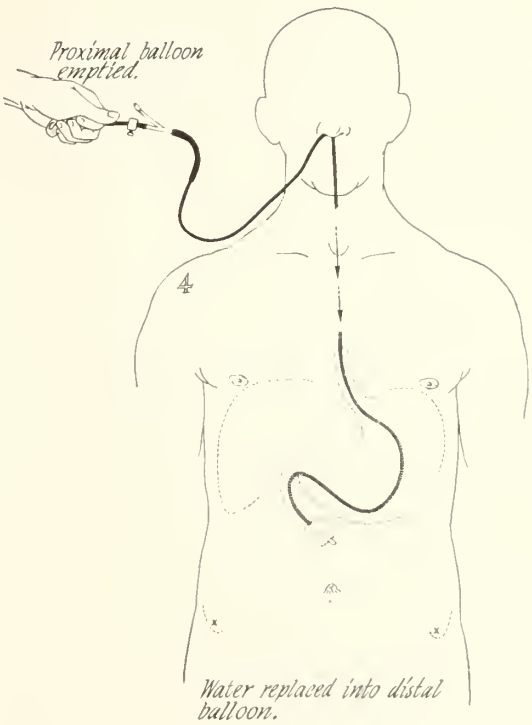


Figure 4

placed from the outside to the inside balloon. A clamp is placed on the inflation tube to keep the water in the inside balloon. (Figure 4.) The tube is mobilized by removing the adhesive tape from the upper lip and is kept oiled at intervals with:

R Cocaine alkaloid ¼ of 1%
Phenol ¼ of 1%
Oil of rose water to scent, in light mineral oil from a dropper bottle.

7. When the tube has descended to the desired location in the bowel tract, the clamp on the inflation tube and the outside balloon are removed, and the water is sucked out of the inside balloon.

CONCLUSION

The above procedure has saved much time and obviated unnecessary discomfort for the patient. The danger of coiled slack tube tying itself into knots is removed. The simulated bolus of the inside balloon is removed when the tube has sought its desired depth by evacuating the water from the inside balloon. This is not possible when mercury and other heavy materials are used in the balloon.

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Anesthesia for the Chronic Poliomyelitis Patient

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THE writer administered anesthetics to 370 chronic or "old" poliomyelitis patients over a period of four years. These were almost all in cases in which operation was done by Harvey E. Billig, M.D., of Pasadena, California, in his research work on nerve regeneration, and they form the basis for this study. It is necessary to know something of Dr. Billig's surgical procedures to understand some of the anesthetist's difficulties and to explain some of his conclusions.

SURGICAL PROCEDURES

Surgical treatment of these cases has been divided into three phases. The first or purely surgical phase included 71 cases and consisted of cutting down to, exposing and interrupting the motor nerves by pinching them with a forceps. These operations were called "nerve motor axon interruptions" and they lasted from one to four hours, depending on the number of nerves to be pinched. The anesthesia in these cases was mainly cyclopropane and oxygen, with endotracheal for 11 of the longest cases.

The second phase was the so-called "manual manipulation." This phase included 195 cases. In this operation no incision was made but a blunt instrument resembling a cold-chisel with a handle was used. It indented the skin down into the paralyzed muscle, separating the fibers and thus stretching and crushing, or interrupting, the nerve fibrils. In this operation the patient is shaken severely and there is heavy pressure brought to bear when thorax, back or abdomen are worked on, all of which interferes with a smooth anesthetic. These operations took from 15 minutes to one hour. During this phase we did a lot of experimenting to find the ideal anesthetic, using the three gases and ether in various combinations, as well as pentothal, avertin and spinal.

The third and last phase, in which we are engaged at present, consists of 104 cases, 96 of whom received sodium pentothal anesthesia, and eight (small children) open drop ether. For these patients Dr. Billig has invented and is using a pneumatic drill which is run by compressed air, and an electrically vibrated drill, both with cold-chisel like points. These instruments vibrate at about 3,200 impulses per minute and are producing better results than instruments formerly used. The operations last from 15 to 45 minutes. The explosion hazard explains why pentothal is the anesthetic of choice.

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PREOPERATIVE EXAMINATION

A preliminary physical examination by the anesthetist is essential, because the poliomyelitis patient does not take an anesthetic well for these reasons:

1. He is flabby and weak muscled because of his enforced inactivity.

2. His heart muscle is flabby as evidenced by the fact that bradycardia under cyclopropane and oxygen anesthesia is not too common. In 131 of those anesthetized in the cases here under review, 76, or 58 per cent, ran an abnormally high pulse, ranging between 90 and 120 per minute. Also, in many cases the heart seemed to show signs of "petering out" earlier than normally might be expected, with the pulse increasing steadily in rate after an hour or so of anesthesia.

3. He may have weakened muscles of respiration as a result of his illness, or he may have scoliosis with twisting of the thorax on the abdomen, or his abdominal muscles may be seriously weakened so that the rib margins move in instead of out on inspiration. About one-third of our cases had noticeably weakened thoracic or abdominal muscles or both.

4. Most poliomyelitis patients, made introvert by the nature of their disease, are tense and sensitive.

Because of these abnormalities a majority of poliomyelitis patients may be considered only fair risks as far as anesthesia is concerned. The anesthetist should study the patient's blood pressure and heart action, the respiratory movements of the upper and lower thorax, the strength of abdominal muscles and the amount of malformation due to scoliosis and rotation of the chest.

PREMEDICATION

The next thing to consider is the premedication. Because the patient is flabby and his respiratory muscles probably weakened, the medication should be minimal. In our cases, the night before operation adults were given pentobarbital (nembutal) 100 mg., one and one-half hours before surgery a second capsule of pentobarbital 100 mg., and one hour before surgery a hypodermic of morphin 12 to 16 mg. combined with atropin 0.3 mg. to 0.4 mg. In only especially husky males is the pentobarbital increased to 194 mg. for sleep and before surgery. Scopolamine was not used because it "deepens the morphine narcosis," (Sollman). It deepens still further, while atropin stimulates, and these patients need stimulation. Again, to quote Sollman, scopolamine is mainly sedative in all doses, while moderate doses of atropine are excitant.

ENUMERATION OF TYPES OF ANESTHETICS

A total of 370 anesthetics were administered. Of these 132 were cyclopropane and oxygen, 37 were cyclopropane and ether, 28 were ethylene and ether with cyclopropane induction, four were nitrous oxide and ether with cyclopropane induction, and seven were ethylene and oxygen with cyclopropane induction—a total of 208 gas anesthetics. Of the remaining 162, 23 were spinals, 23 were open drop ether with ethyl chloride induction, three were avertin and gas, 111 were sodium pentothal intravenously, and two were mixed—that, is they took an excessive amount of pentothal so we switched to gas.

We limited ourselves to one full gram of pentothal, so if a patient took a gram in 10 to 15 minutes we changed to gas and oxygen.

CHOICE OF ANESTHETIC

The poliomyelitis patient looks like an ideal "set-up" for cyclopropane and oxygen, that is, a light cyclopropane with plenty of oxygen, and we used it in all our early cases. It worked well for the surgical "nerve motor axon interruption" operations where the procedure took a long time (from one to four hours) and where endotracheal administration was resorted to in 11 of the longer cases. But the after-results were not so pleasing. Sixty-three of 118 patients, or 53 per cent, developed excessive nausea and vomiting lasting four to twenty-four hours. This is unusual when compared with the normal run of surgical cases. We tried all sorts of ways to avoid it; we tried pantapon and also dilaudid instead of morphine; we tried intravenous glucose, adrenal cortex, all to no avail.

Then in the second phase when the "manual manipulation" was being done, with its shaking of the patient as in a violent massage, its turning of the patient from a supine to a prone position, its sudden changes in pain stimuli, the need for abdominal relaxation, and the changing pressures on the back and chest interfering with normal respiration, we found that cyclopropane and oxygen was not adequate. Stridors developed easily; cyanosis was frequent even with excessive oxygen; there was leakage of gas around the mask and a smooth anesthetic could not be maintained.

So we experimented with gas mixtures—cyclopropane and ethylene; cyclopropane and ether; cyclopropane, ethylene and ether; and finally ethylene or nitrous oxide and ether with cyclopropane induction. We found that the addition of ether to ethylene or nitrous oxide with cyclopropane induction made for a smoother anesthetic, and that stridor or laryngospasm was less frequent, the respirations were stronger and deeper, a good color was maintained throughout, and a loss of gas did not so suddenly affect the plane of anesthesia. Finally we found that postoperative nausea and vomiting was less, only 38 per cent, or 14 out of 37 cases, being so afflicted.

Our experience developed a few general observations on gas anesthesia for poliomyelitis patients:

1. An airway should not be used unless necessary, because the shaking of the patient also shakes and rattles the airway in the pharynx, which sets up a laryngospasm very easily.

2. When the back and chest muscles are worked on, especially at T6 and above, the gas is forced out of the patient's lungs sharply, and breath-holding or laryngospasm usually develops. Frequently the anesthetist has to ask the surgeon to pause for a minute or two until respiration can be re-established by bag pressure.

3. When a patient with paretic respiratory muscles is lying on his face, he must be helped by bag pressure to breath deeply enough to prevent cyanosis. Frequently he just is not strong enough to expand his lungs well against his own body weight.

As to the other anesthetics, we used avertin and gas three times only, because the shaking of the patient and the pressures on the abdomen when the abdominal muscles were worked on, forced the fluid out of the rectum. Open drop ether with ethylchloride induction was used on 23 small children under six years of age and on two adults who took gas poorly. It worked smoothly. Twenty-three spinal anesthetics were given to those who asked for them. Dr. Billig made careful muscle tests of these patients afterward and found that no damage had been done. However, there are two reasons for not recommending this type of anesthetic in manipulative surgery. First is that, because of the light premedication, the patients are only one plus drowsy (on a scale of 1 to 4 plus) and the shaking makes them quite uncomfortable. Second, in our experience there has been an abnormally high incidence of spinal headache, four out of twenty-three having complained of it the next day. It is probable that some of the patients had headaches of which we heard nothing because usually they are discharged the day after surgery, or about 30 hours postoperatively. However, there appears to be no reason why a spinal should not be used on any poliomyelitis case for general surgical procedures in the lower abdomen or lower extremities.

PENTOTHAL SODIUM

Pentothal sodium intravenously was used 111 times in this series, the first 26 being in the second or "manual manipulation" phase. We did not like it too well in this procedure because the shaking of the patient occasionally dislodged the needle. Moreover, when the patient was moved from his back to his abdomen we removed the needle and then had to reinsert it in a difficult position. Another reason for our initial unsatisfactory experience was that, knowing of its respiratory depressing effects we gave too little pentothal to relax the abdominal muscles.

In the third phase, or pneumatic drill operation, however, we have used pentothal almost exclusively (except for eight ether anesthetics on small children) with good results. Experience with 85 cases thus far has taught us to give sufficient pentothal to bring

about moderate abdominal relaxation. Also we have learned to press the needle well into the vein so that it is not easily dislodged; and when the patient is turned over from back to abdomen we strap the needle in place with adhesive tape and remove only the syringe. To protect the patient a gas machine is always at hand to furnish oxygen if needed. We have it in readiness in every case in which the chest or back is to be worked on, and oxygen is given if there is any color change such as pallor or slight cyanosis. We have used oxygen or oxygen and nitrous oxide in 20 of 111 cases.

There have been some interesting complications with pentothal. Fifteen cases exhibited trembling or shaking which might be classified as a mild type of convulsion. This occurred when the anesthesia was light, and disappeared when it was deepened. Patients who trembled when being induced trembled again during recovery in bed. (The nurse in charge should be warned of this, lest she think the patient is having a chill.)

Eleven cases exhibited signs of early shock, with loss of color or pallor, but only two showed signs of moderate shock with a rapid and weak pulse needing treatment with trendelenberg position, caffein or coramine.

There were two bizarre reactions. One patient's face became yellowish, but his pulse was 84 and respiration 18 and there was no other sign of trouble. Another patient had a greyish pallor and a hyperpnea, with respiration rate going up to 50 per minute whenever the pentothal was pushed. Neither reaction is explainable.

The advantages of pentothal sodium are these: It is safe to use in the presence of sparking apparatus such as the electric drill; it is easily administered; the patients prefer it to any other anesthetic because it seems to be nothing but another hypo and has pleasant after-effects. Vomiting is negligible, although 20 of the 111 (or 18 per cent) experienced it in some degree. Fourteen vomited once, four more than once though moderately, and two severely and over a period of several hours.

COMPLICATIONS AND SEQUELLAE

Although considerable shock might be expected to develop during operations such as those reviewed here, because of the muscle trauma, the fact is that it occurred rather rarely in the 370 cases. Of the 370 cases, four (1 per cent) required intravenous glucose during the operation, eight (2 per cent) required intravenous fluids afterward and 19 (5 per cent) required carbogen inhalations with coramine or caffein postoperatively—a total of 31, or 8 per cent, showing sufficient signs of shock to require treatment. It is interesting to compare this 8 per cent for the entire series with the experience in the 111 cases in which anesthesia was by pentothal. In the pentothal series, only 2 per cent required treatment for shock.

As to other complications, there were four spinal headaches, one case of hiccoughs, and one pulmonary complication—a dry cough following endotrachael anesthesia. No pentothal sensitivity was encountered.

In general these patients were in good condition the next day, ate a good breakfast and were discharged at noon. Few complained of muscle soreness or other disability.

CONCLUSIONS

1. Because the poliomyelitis patient is not physically a normal person, he should be examined carefully before operation.
2. Light premedication should be the rule.
3. If a gas anesthetic is to be used, it should be of a respiratory-stimulating type. Adding ether to cyclopropane is good, but in our experience the best is ethylene and ether with cyclopropane induction.
4. Spinal anesthesia is safe for operations below the umbilicus.
5. Sodium pentothal intravenously, with oxygen by mask if necessary, gives good anesthesia and is the anesthetic preferred by the patient.

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The Use of Antibiotics in Surgical Practice*

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THE usefulness of antibiotic materials in the therapy of infections is well known. New preparations are being developed, and the scope of application of antibiotics now available is being extended. At the same time, however, that the efficacy of certain of these materials is becoming established, the limitations of their usefulness are likewise becoming apparent. In a consideration of the use of chemotherapeutic materials in surgical infections it must be remembered that these materials are merely adjuncts to surgical treatment. They do not replace sound surgical judgment and diligent observation of well-established surgical principles.

Antibiotics are substances derived from the metabolic products present in the culture media upon which are grown certain living organisms, particularly the molds. Of the scores of such substances prepared, only three have proved to be of clinical value by virtue of possession of the properties of high bacterio-static and bactericidal potency, relative stability, and low toxicity. These are penicillin, tyrothricin, and streptomycin. Tyrothricin does not warrant lengthy consideration in this discussion. It was first prepared by Dubos in 1939 from Bacillus brevis, and was found to be made up of two constituents, gramicidin and tyrocidine. It is particularly effective against gram-positive organisms, but its marked toxicity limits its usefulness to local application, in the form of ointments and compresses, to surface lesions. Given intravenously in experimental animals, the material causes hemolysis of the red cells, destruction of the leucocytes, liver necrosis, and death. Given intramuscularly or subcutaneously, it produces a local sterile tissue necrosis and loses its effectiveness. Its usefulness is restricted to lesions that are open, with adequate surgical drainage, where there is sufficient blood supply, and in which the predominant organisms are streptococci or staphylococci, or both.[14]

PHYSICAL, ANTIBACTERIAL, AND PHARMACOLOGICAL PROPERTIES

Penicillin, first discovered by Fleming in 1929 and then applied clinically by Florey in 1940, is produced by the mold Penicillium notatum and is the most useful of the antibiotic agents. It possesses the stability, the low toxicity, and the effectiveness against certain bacteria required of a practical antibiotic. The unit of penicillin is the amount which, when added to 1 cc. of a broth culture of a standard strain of staphylococcus, will just inhibit growth of the organism. Manufacturers produce purified sodium salts of penicillin for the usual parental use, calcium salts of penicillin for local use, and, recently, potassium salts of it for use in a beeswax and oil preparation.

An investigation of the increased relapse rate in cases of syphilis treated with supposedly adequate doses of penicillin revealed the existence of the four major fractions G, X, F, K, whose production is dependent upon the conditions under which the antibiotic is produced from the mold. Regardless of *in vitro* activity, in the body, penicillin G and X are much more effective against infection than K and F,[2,7] and attempts are made now to produce commercial penicillin with as high as possible a proportion of penicillin G. Although penicillin X is more active than G against a few organisms, penicillin G has the greater potency against most organisms and against the spirochete of syphilis. Synthetic crystalline penicillin G, known as benzyl penicillin, has recently been produced at Cornell University.[6]

The production of streptomycin by the mold Actinomyces griseus was described by Waksman[25] of New Jersey in 1944. It was subjected to strict scrutiny, as had been penicillin, and it also was found to possess the properties of stability, low toxicity, and effectiveness against a variety of pathogenic organisms which in this instance were principally the gram-negative bacilli. Streptomycin salts (hydrochloride and sulfate) are dispensed as a light yellow powder in the dry state in vials containing 1.0 gram, 0.5 gram or 0.25 gram. One gram contains 1,000,000 units. The unit is defined in a manner similar to that of penicillin except that the standard organism is Escherichia coli. Against an organism susceptible to both penicillin and streptomycin, the unit of penicillin is 10 to 15 times as effective as the unit of streptomycin, so that in general, where the average daily dose of penicillin is perhaps 200,000 to 300,000 units, that of streptomycin is 2 to 3 million units.

Before the indications for use, the proper dosage, and the mode of administration of penicillin and streptomycin could be determined, it was necessary to have an understanding of the antibacterial properties, the absorption, excretion, distribution, and toxicity of these substances.

It is relatively simple to determine sensitivity of organisms to antibiotics in the test tube. Unfortunately the determination of *in vivo* sensitivity is not possible. There seems to be an enormous discrepancy, particularly with streptomycin, between the sensitivity of organisms *in vitro* and the effect of streptomycin on these same organisms in the body.

In general the organisms usually considered "sensitive" to penicillin are the gram-positive cocci such as the streptococcus, the staphylococcus, and the pneumococcus; and the gram-positive bacilli of anthrax, diphtheria, botulism, tetanus, and gas in-

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fection. In addition, penicillin inhibits the gram-negative meningococcus and gonococcus. There is no organism that shows an *absolute* resistance to penicillin in sufficient concentration. Organisms which are usually classified as "sensitive" are those inhibited by concentrations of penicillin of 0.1 unit per cc. or less, which is a concentration fairly readily obtainable in the body.[5] Some organisms that are usually considered resistant are inhibited by concentrations of 1 to 3 units, or as high as 10 to 300 units per cc., which are concentrations that can be obtained clinically in the urine. It must be emphasized, however, that under clinical conditions higher concentrations may be required than are indicated by *in vitro* tests, as the number of organisms may be higher and inhibitory substances such as penicillinase, and undoubtedly others as yet undiscovered, may be present.

The organisms commonly considered to be sensitive to streptomycin are those whose growth *in vitro* is inhibited in a concentration of 8 to 16 units per cc. This concentration can be obtained clinically in the serum and most body fluids. In certain instances, however, one is not limited to the treatment of organisms with this high sensitivity. In the urine, concentrations of 500 to 1000 units of streptomycin per cc. are easily attainable. The streptomycin-sensitive organisms include the gram-negative bacilli, Escherichia coli, Bacillus aerogenes, Bacillus proteus, Bacillus pyocyaneus, the typhoid-paratyphoid group, Friedlander's bacillus, Hemophilus influenzae, Bacillus pertussis, Brucella abortus, and the organism of tularemia. Streptococcus fecalis and the tubercle bacillus are also included.

It is not an uncommon occurrence to have infections fail to respond to penicillin or streptomycin even though the organisms are definitely susceptible at the onset of treatment. Further sensitivity tests in many such instances show an enormous increase in resistance to the antibiotic. These highly resistant organisms are thought to be either the overgrowth of a few non-sensitive organisms not discovered before treatment, or the result of an actual increase in resistance of the insufficiently-treated, previously highly sensitive organisms. It seems likely that the correct explanation is that of an acquired resistance in organisms originally sensitive but exposed to insufficient concentrations of the drug. This argues for heavy doses of the antibiotic that will be adequate from the very start of treatment. Of great importance in therapy is the delivery of adequate amounts of the antibiotic to the actual site of infection, so that each organism may be bathed in a lethal concentration maintained sufficiently long to allow the natural defenses of the body to deal with these devitalized bacteria.

Penicillin given parenterally distributes itself rapidly throughout the body, so that in 15 to 20 minutes after intramuscular injection it reaches a maximum concentration in the blood stream. However, since it is rapidly eliminated, largely by the kidneys, only traces remain in the blood stream two hours after a single dose. The material does not pass through the meninges or into the pleural or joint cavities, making local injection of penicillin necessary in infections of these spaces.

The ordinary penicillin given *orally* in the usual doses does not produce a therapeutic level in the blood stream. Of the three possible explanations, namely, destruction by gastric juice, failure of absorption, and inactivation by colon bacteria, recent experimental evidence points to failure of absorption as the difficulty.[23,24] The duodenum is felt to be the location of maximum absorption. Under investigation are agents which will convoy the penicillin through the duodenum, but release it before it can be carried to the colon.

Streptomycin also distributes itself generally throughout the body with the exception of the thecal and pleural spaces. About 80 per cent is excreted through the kidneys in 24 hours but its excretion is much slower than that of penicillin.[10] This allows a higher concentration of the drug to be built up in the blood stream with smaller and less frequent doses. Almost 100 per cent of streptomycin taken orally appears in the stool in the active form. The drug does not seem to pass in either direction through the bowel wall. In bile, penicillin appears in the same concentration as exists in the blood stream. Streptomycin appears in the bile in about half the blood stream concentration.

METHODS OF ADMINISTRATION

Originally, penicillin dissolved in saline solution was given by intermittent or continuous parenteral administration. Newer methods of administration are being developed along two lines: the first is designed to promote slower absorption or decrease the rate of elimination in an effort to decrease the number of injections necessary to maintain a satisfactory blood level, and the second to apply high concentrations of penicillin topically to the site of the infection. The most practical slow-absorption method is the use of the preparation that has become known as the "Romansky" formula. This consists of 300,000 units of amorphous calcium or crystalline potassium penicillin in 4.8 per cent beeswax in peanut oil totalling 1 cc. Studies made by Romansky,[21] and repeated by others, show that the maximum concentration of penicillin in the blood occurs four hours after one such injection and is about 0.6 unit per cc., declining gradually to 0.06 units per cc. 12 hours after injection. At present it seems that to achieve therapeutic levels with certainty, one should administer the beeswax and oil preparation every 12 hours. The injection produces a temporary local soreness, but no muscle necrosis. The beeswax is removed by phagocytosis and disappears by the 30th day. It is important that the material be injected intramuscularly. Of 4,000 cases reported by Romansky, sterile abscess occurred in only two, in both of which the injection was subcutaneous. The therapeutic results in these 4,000 cases were satisfactory and in all ways comparable to those obtained by the usual penicillin-in-saline, frequent-injection method. The incidence

of allergic reactions with the Romansky preparation was 5 per cent.

It has been demonstrated that when penicillin is given by mouth, in order to produce comparable concentrations in the blood stream, there is required a dose five times as large as when the drug is injected parenterally. Many attempts have been made to increase the passage of penicillin from the gastrointestinal tract into the blood stream. These include dissolving the penicillin in such materials as peanut oil, sesame oil, or cocoa butter; encasing the penicillin in hardened gelatin capsules or resin cellulose plastic capsules; and administering the penicillin orally with antacids such as sodium citrate or aluminum hydroxide. A recent report [16] on five commercial preparations of penicillin for oral administration revealed that when doses of 100,000 units were given, barely adequate blood stream levels of 0.03 unit per cc. were attained by four of the substances in one-half to one hour and maintained only two hours. The conflicting results reported, the uncertainty of absorption, and the large amount of penicillin necessary to produce adequate blood levels, have prevented extensive use of oral administration of penicillin.

Penicillin administered by inhalation, or "aerosol" penicillin, is becoming popular in the treatment of respiratory infections.[11] Penicillin so used is easy to give, is less costly to administer, is deposited locally in intimate contact with infecting organisms on the bronchopulmonary mucosa, and is rapidly absorbed into the blood stream through the alveolar surfaces. Administered by inhalation, 50,000 units of penicillin produce blood concentrations of 0.05 to 0.20 units per cc. The crystalline sodium salt of penicillin is the least irritating and most commonly used. The usual dose is 50,000 units in 1 cc. of normal saline used as a spray at three-hour intervals with an ordinary rubber bulb hand nebulizer. Clinical results are encouraging, particularly in the acute and subacute infections. Favorable clinical effects noted are diminution of sputum, a change to a mucoid type of sputum, decrease in cough, and subsidence of signs of acute toxemia. Penicillin-sensitive pathogens are entirely eliminated from the sputum. Penicillin spray is particularly useful as a preoperative measure prior to lobectomy or pneumonectomy for bronchiectasis.

Local or regional injection of penicillin into an area of cellulitis or into the tissue immediately about a furuncle, carbuncle, or felon has been reported to yield good results [22] and to eliminate the need for systemic therapy. It would seem advisable to approach such therapy with a certain degree of caution in other than small, well-localized infections. The dosage recommended is 50,000 to 100,000 units in 2 to 10 cc. of saline injected directly into the lesion through several needles.

The sublingual oral administration of penicillin [9] has been reported to produce therapeutic blood levels, but this route of administration is not yet to be recommended in any but trivial infections because of the uncertainty of absorption.

Penicillin ointment, 500 units per cc. of lanolin or petroleum base, is widely and effectively used in superficial skin infections and ocular infections.

Streptomycin may be administered in the same manner as penicillin, but there are as yet insufficient clinical observations to warrant its administration in serious infections by routes other than intramuscular or intrathecal injection. Most serious systemic infections call for a daily dosage of 3 to 5 gm. dissolved in 2 or 3 cc. of saline, given in divided doses at four-hour intervals. Intrathecal administration is used in meningitis of Hemophilus influenzae where 50 to 100 mg. in isotonic saline solution are given intraspinally once or twice daily. It is important to start therapy with *adequate* doses to prevent an increase in resistance of the organism to the antibiotic. The place of oral administration of streptomycin in therapeutics is not yet determined. Doses of about 3 gm. daily given in six divided doses in water definitely have a bacteriostatic effect on the flora of the stool.

CLINICAL USES

It is not possible to deal here with the method of therapy and dosage scheme recommended in treatment of each of the infections that might be encountered in surgical practice. An understanding of the applicability of antibiotics and of the limitations of antibiotic therapy in surgical infections calls for an understanding of the fundamental difference between surgical and medical infections. These differences that make surgical infections less likely to respond to drug therapy have been well outlined by Meleney.[17] Surgical infections are characterized by a local spontaneous or traumatic breakdown of tissue, or localized exudation into a body cavity or into the substance of solid tissues. This necrotic tissue must be evacuated or absorbed in the healing process. The blood vessels in the wall of an abscess are thrombosed and any medication coming via the blood stream may have difficulty penetrating or diffusing into the focus far enough to reach the offending organisms. On the other hand, in a well localized lesion, opportunity is afforded for local application of medication. Many of the surgical infections are mixed infections where there may be synergistic action between bacteria and where one or more of the organisms may be resistant or actually antagonistic to the antibiotic. However, in the early stages of many surgical infections, before there is a breakdown of tissue there is a stage of diffuse inflammation or diffuse cellulitis. Drugs given at this stage or in infections of this type do not encounter the difficulties mentioned above and have a more favorable opportunity to contact and control any susceptible organisms.

It is thus seen, as Meleney has pointed out, that the factors that tend to limit the usefulness of antibiotic therapy include: (1) infection with organisms of low susceptibility, (2) presence of antagonistic substances such as penicillinase, (3) development of

resistance during therapy, (4) administration of inadequate doses, and (5) certain local characteristics of surgical infections preventing adequate contact of the drug with the organism and making necessary surgical treatment in the nature of drainage.

Time permits only a general discussion of the various clinical infections treated with antibiotic materials. From the accumulated experience with the use of penicillin in established surgical infections a few generalizations have been made:[17] (1) Penicillin alone or as an aid to surgery will control about two-thirds of the established surgical infections usually encountered. (2) Studies of the Committee on Chemotherapy of the National Research Council showed penicillin to be most effective in cases of furuncle, cellulitis, mastoiditis, carbuncle, suppurative arthritis, lung abscess, superficial abscess, brain abscess, and osteomyelitis. (3) Penicillin was found to be moderately successful in cases of deep abscess, thrombophlebitis, sinusitis, infected soft tissue wound, infected operative wound, otitis media, infected compound fracture, and ulcer of the skin. (4) It was found to be not so successful in cases of empyema, infected burns, gas gangrene, actinomycosis, peritoneal abscess, and diffuse peritonitis. (5) Penicillin therapy is more successful in acute rather than in chronic infections, and if given early rather than late in the disease. (6) Many cases of well localized surgical infection can be successfully treated with local injection of penicillin solution or local application of penicillin in ointment form. (7) Penicillin is not as successful in mixed infections as in those caused by a pure culture of a susceptible organism. (8) Important causes of failure include resistant strains of staphylococci or streptococci, mixed infections with organisms capable of producing penicillinase, too little or too late administration of penicillin, associated diabetes or arteriosclerosis, and too conservative surgery.

Fortunately, most of the penicillinase-producing organisms seem to be relatively non-pathogenic and are non-invasive so that local application of agents inhibiting their activity may permit penicillin to function at the site of the infection, be it given systemically or locally. Such agents are being investigated. One of these is streptomycin in concentrations of 500 to 5000 units per cc.

Penicillin has had a great effect on the recovery rate from septicemia due to staphylococci, streptococci, and pneumococci, which is usually associated with some other pathological process such as cellulitis, carbuncle, abscess, septic abortion, osteomyelitis, and so on. Such patients should receive intensive penicillin therapy parenterally, with intermittent intramuscular injections of perhaps 50,000 to 100,000 units of penicillin every three hours day and night. Such therapy should be continued for several days after the temperature has returned to normal and all clinical signs of active infection have disappeared. It is inadvisable to lessen the dosage during the therapy since this may lead to production and survival of penicillin-resistant strains of the infecting organism.

In the treatment of infected wounds, penicillin has been of great help in combating sensitive organisms, but of great importance here is the observation of the principles of adequate debridement, sufficient drainage, elimination of dead space, and suturing without tension. The drug should be administered parenterally to prevent further invasion of the infection. Benefit may be obtained from local application of the drug by means of irrigation, compress, or continuous instillation. Penicillin administration in cases of gas gangrene does not replace adequate surgical and antitoxin treatment, but it is a worth-while addition to the treatment of so serious a condition. Conflicting opinions exist regarding the value of penicillin in the treatment of tetanus. The consensus of opinion is that it should be given, but the usual measures should not be interfered with by antibiotic therapy.

One of the most frequently encountered serious infections in general surgical practice is peritonitis of intestinal origin. This is a complex process. It is practically always a mixed flora infection with streptococci, clostridia, and gram-negative organisms. Which of the organisms are the true pathogens is not certain. Very likely the gram-negative bacilli play a minor role. Furthermore, the role of the peritoneum is not entirely understood. Recent clinical experience[3] and experimental work[3] show that penicillin administered intramuscularly in frequent large doses in the order of 100,000 units every two hours is very effective in the control of peritonitis and is the best chemotherapeutic agent in use at the present time. It is thought that large doses in excess of the amount inactivated by the penicillinase formed as a result of the infection, overcome the sensitive, more pathogenic coccal and clostridial organisms, and allow the peritoneum to handle the less pathogenic gram-negative organisms. Since penicillin is effective in the presence of exudate and debris, it is worth while in generalized peritonitis from a perforated appendix to leave large amounts, such as 200,000 units in 50 cc. of saline, in the peritoneal cavity at the time of operation.

In pulmonary infections with sensitive organisms penicillin is beneficial. Daily local injection into empyema cavities together with parenteral therapy gives favorable results in from 30 to 40 per cent of cases. In acute putrid lung abscess, penicillin parenterally and by inhalation, together with general medical measures, has cured a high percentage of cases. In chronic abscess the value of penicillin lies in the reduction of the amount of infection before surgical treatment is undertaken. The same use is made of penicillin inhalations in cases of bronchiectasis to be subjected to surgical therapy.

In acute osteomyelitis the dramatic effect and unquestionable value of penicillin have been demonstrated again and again. The dosage must be large—40,000 to 50,000 units every three or four hours—and started early.

In chronic osteomyelitis the systemic and local, preoperative and postoperative use of penicillin have increased the percentage of successful seques-

trectomies, sinus closure operations, and bone grafting procedures. Truly, in this condition penicillin is an adjunct to surgical therapy and not a substitute for it.

The treatment of pyogenic abscess of the central nervous system has not changed materially since the advent of chemotherapy. The results in pneumococcic meningitis complicating fractures through the accessory sinuses have been exceptionally good. The drug is administered both parenterally and intrathecally.

In gynecological practice, penicillin has proved itself effective not only in the treatment of acute gonococcal disease and acute streptococcal infections, but also in the preoperative elimination of organisms in chronic inflammatory disease to be treated surgically.

In otorhinolaryngology cures of cavernous sinus thrombosis with penicillin are no longer rare. In this specialty, topical application of the agent finds widespread use in pharyngitis, tonsillitis, sinusitis, and otitis media, with generally favorable results.

Ophthalmologists make use of penicillin drops or ointment, in a concentration of 500 units per cc., in superficial infections about the conjunctiva. Infections of the eyeball are treated with parenteral injection since the drug readily enters the fluids of the eye that is inflamed. Beneficial results are reported by some who have injected penicillin directly into the eyeball.

Streptomycin has not yet proved as successful in gram-negative infections as penicillin in the gram-positive ones.[4,13,20,26] Mention should be made of the great efficacy of streptomycin in tularemia and Hemophilus influenza meningitis, but the results of its use in many surgical infections have been disappointing.

In the treatment of established wound infections in which the organisms are streptomycin-sensitive, the results have not been impressive whether this agent be administered systemically or topically. Thus, streptomycin is not appreciably different from other chemotherapeutic materials in management of wound infections. Adequate surgical treatment supplemented by systemic specific chemotherapy to control the invasive aspects of infection is still the chief therapeutic measure.

In bacteremia with sensitive gram-negative organisms the results with systemically administered streptomycin are good provided the focus of the infection can be eradicated whether it be an infected tooth, bone or renal carbuncle. The drug should be given intramuscularly in saline in a total daily dose of 3 to 5 gm. in eight divided doses of 3 to 5 cc. each.

In peritonitis of intestinal origin, streptomycin has not been remarkably effective. In one series[4] of 30 cases, 60 per cent were recorded as improved. The evaluation of any chemotherapeutic agent in an infection with so many variables is difficult. Investigation of streptomycin therapy in a more controllable experimental peritonitis in animals has shown it to have little effect. Penicillin definitely is the drug of choice in therapy of peritonitis.

Streptomycin is a useful agent in urinary infections produced by bacteria susceptible to the drug if they are not associated with obstruction, retention of residual urine, calculi, undrainable foci, or poor kidney function.[19] Any of the above factors acts to prevent all the organisms from coming in contact with a suitable concentration of the antibiotic. Such a situation favors the development of streptomycin-resistant strains of the organisms. Even though streptomycin is concentrated in the urine, the dose should be high—2 to 3 gm. daily in divided doses intramuscularly. If the infection does not yield in three or four days it is not likely that it will. It is desirable to determine whether or not the organisms are sensitive before subjecting the patient to the expense and discomfort of streptomycin therapy. About 60 per cent of properly selected cases of urinary infection show favorable results as evidenced by subsidence of clinical symptoms and sterilization of the urine. There are reports of cases of renal tuberculosis in which the urine has been cleared of tubercle bacilli by prolonged administration of streptomycin. It is not possible yet to say that the improvement will be permanent.

It has been demonstrated that streptomycin given orally in a dose of 1 gm. daily is more efficient than succinyl-sulfathiazole in reducing the stool bacterial count of Escherichia coli, Streptococcus fecalis and clostridium. As yet, however, no series of cases has been reported in which clinical or experimental results were noted with streptomycin used in the preparation of the large bowel for surgery. The preliminary work in this field is encouraging.

TOXICITY

The administration of penicillin has only rarely been attended by evidence of *severe* toxicity but reactions do occur. Those that are due to any direct toxic action on tissue itself are negligible. However, both commercial and crystalline penicillin possess definite antigenic and allergenic properties. Sensitivity to penicillin may be evidenced by immediate reactions usually occurring in patients with known penicillin sensitivity or previous exposure to the drug.[18] In certain individuals this may be an expression of a common sensitivity to all molds such as are present in fungus infections of the feet. Delayed sensitivity to penicillin occurs in 5 to 10 per cent of cases, resembles serum sickness, and is the result of repeated injections or topical applications. Manifestations include urticaria, angioneurotic edema, myalgia, and arthralgia.

The earlier preparations of streptomycin frequently gave rise to a histamine-like reaction with flushing of the skin. Acute toxic reactions with headache, palpitation, arthralgia, and delayed fever occasionally occur, especially with doses over 5 gm. per day. Studies on kidney and liver function, and on cellular blood constituents show no disturbance after streptomycin administration.

The only chronic toxic effects have been reported from Mayo Clinic[1] where patients with tuberculosis have been receiving streptomycin over many months.

In some, after three to six weeks' daily therapy, a loss of equilibrium manifests itself. This does not constitute a contraindication to therapy since loss of vestibular function will be completely compensated for eventually. In other cases, after a long period of therapy the patient has noted a low-pitched continuous tinnitus which indicates the onset of nerve deafness for low tones.[1] When this occurs the drug should be discontinued. In an otherwise normal eighth nerve, the hearing probably will return to normal if the drug is discontinued.

BACITRACIN

It seems appropriate to mention the most promising of the newer, as yet untested, antibiotic materials. This is *bacitracin* produced by a strain of Bacillus subtilis, which was cultured at the Presbyterian Hospital[12] from the compound tibial fracture of a patient named Tracy, from whom the antibiotic derives its name. The material is water-soluble, stable, and effective *in vitro*, and *in vivo* in animals, against streptococcus, staphylococcus, and clostridium. Clinical trials show it to be non-toxic. Further investigations need to be done to determine its clinical usefulness.

SUMMARY

With the application of the antibiotic substances to the treatment of infections, a very important new principle has been introduced to practical therapeutics. Newer and more powerful agents will undoubtedly be discovered. This in no way, however, lessens the need for the application of the all-important principles of good sound surgical practice.

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ACUTE ILEOCOLITIS

A Case Report

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A WOMAN, aged 25 years, was admitted to the hospital on June 25, 1945, with a diagnosis of acute appendicitis. She gave a history of vague abdominal pains for two weeks in the right lower quadrant. The pain was worse after meals. At 3 a.m. on the day of admission she was awakened by severe abdominal pain. This pain did not radiate to the back or lower extremities. Vomiting occurred once but diarrhea or chills did not occur. The last menstrual period was normal and urinary disturbances were absent. There was one child, aged three years.

Physical examination revealed a well developed, well nourished female who was acutely ill. She appeared more ill than one would expect from ordinary acute appendicitis. The only positive findings were marked tenderness and spasm in the right lower quadrant of the abdomen and marked tenderness and fullness in the right fornix. Movement of the cervix caused severe pain in the right side. A rectal examination revealed tenderness in the right side. The temperature was 102° F. and pulse 100. Erythrocytes numbered 5,100,000; leukocytes 25,200 (97 per cent neutrophils). The sedimentation rate was slightly increased and urinalysis was negative.

Acute salpingitis with pelvic peritonitis was suspected. The patient was placed in the Fowler position and was given 15,000 units penicillin every three hours. Three days later, since the tachycardia and fever did not subside, 1 gm. of sulfadiazine was given every three hours. Two days thereafter, on June 30, 1945, the patient seemed much better. The temperature still fluctuated between 100° and 104° F., but there was less abdominal pain. A tender and fluctuant localized mass could be felt in the right lower abdomen. An appendiceal abscess was suspected at this time. Under spinal anesthesia a small transverse incision was made in the right lower abdomen. A small amount of clear serous fluid was present. About 15 inches of ileum was found to be red, swollen and hard, with a solid feel like a tumor mass.

The cecum was similarly involved but the inflammation stopped abruptly a short distance above the ileo-cecal valve. Parts of the ileum were adherent to the right tube, ovary and uterus. The whole mass was adherent to the adjacent walls and no attempt was made to locate the appendix. The abdomen was closed. Convalescence was uncomplicated. The temperature fluctuated between 100° and 104° F., the pulse between 90-120, but the patient expressed herself as feeling better and she looked better. The leukocyte count varied between 12,400 and 29,000 and the sedimentation rate between 26 and 31 mm. in one hour.

On July 2 the sulfadiazine and on July 4 the penicillin was discontinued. Subjective improvement continued. The mass in the right side gradually disappeared so that it could not be felt; the pelvic mass and tenderness also disappeared.

On July 12 a sore throat was noted and impaired resonance was discovered at the base of the left lung. Two hundred fifty cc. of clear straw colored fluid was removed from the left pleural sac. The temperature varied between 99.4° and 102° F. Penicillin was resumed, 20,000 units administered intravenously every three hours.

On July 16 the patient's condition was unchanged; penicillin was discontinued and sulfadiazine 2.0 gm. every four hours begun. Two days later all medication was stopped. The fever gradually subsided and there was much subjective improvement. Tuberculin tests were negative. An x-ray of the chest was clear.

On July 29 the temperature rose to 103° F., leukocytes numbered 19,000 and non-radiating pain was first noted in the left middle quadrant of the abdomen.

An excretory urogram showed dilatation of the ureter and pelvis of the left kidney. Subsequently a well localized mass developed in the left middle abdominal quadrant. Muscles in this area were rigid and tender. Again an abscess was suspected. Under local anesthesia a small transverse incision was made directly over the mass. In the left colon was found a hard granulomatous mass similar in feel and appearance to that in the cecum and ileum. It was adherent to the surrounding tissues. The abdomen was closed.

Penicillin therapy was resumed and emetin HCL 0.0325 gm. (gr. ½) was administered twice daily. The fever gradually subsided to normal and there was marked improvement in the general condition.

Six days later emetin was stopped because of generalized body pains and fever and was replaced by carbarsone, 0.25 gm. twice a day. Subsequently generalized urticaria developed; temperature rose to 103° F., and there was severe headache. Penicillin was discontinued.

Two weeks postoperatively the patient felt perfectly well and the temperature and pulse were normal. Pain and tenderness in the abdomen were lacking and no masses could be felt. The incisions had healed by first intention. Leukocytes numbered 7,900.

One year later in a letter the patient said she was perfectly well and had had no recurrence of any trouble.

COMMENT

The relationship of the emetin and carbarsone to the patient's recovery is an open question. Ameba were not found on two stool examinations. One sigmoidscopic examination performed during the illness was negative for ulceration and ameba. Penicillin and sulfadiazine only partially controlled the disease.

Inflammation in the descending colon appeared one week after all medication had been stopped. The greatest improvement seemed to occur after the administration of emetin and carbarsone.

In 1932 Crohn,[4,5] Ginsburg and Oppenheimer, described a group of benign non-specific granulomas which were confined to the terminal ileum. They used the term regional ileitis to describe this pathological and clinical entity. The clinical features in these cases were diarrhea, lower abdominal pain, fever, loss of weight, and anemia. Some patients presented symptoms of partial obstruction and some cases were complicated by internal or external fistula. Since then, many terms have been used by other observers in somewhat similar cases, i. e., enteritis, chronic segmental ileitis, ileitis with segmental colitis, and ileocolitis.

It was later learned that the same pathologic and clinical features of ileitis may be found anywhere in

the ileum or jejunum and that in so called "skip" areas between the normal segment of bowel there were frequent occurrences. At first it was believed that the disease was limited to the small bowel, but cases appeared in the literature which described involvement of the cecum and other parts of the large intestine. Bockus [1,2] and his associates reported nine cases of involvement of the large bowel in a series of 21 cases of ileitis. The rectosigmoid was seldom involved.

The disease generally runs a chronic course but a few cases have appeared which suggest an acute phase. The case reported here fits in with the acute aspects of the disease as described by Gruenfeld.[9] Felsen,[7] Clute.[3] De Courcey,[6] Jackson,[10] and Smithy.[12]

Until Crohn, Ginsburg and Oppenheimer [4] clarified the clinical entity, the disease was confused with intestinal tuberculosis and malignant lesions.

PATHOLOGY

The involved ileum appears thickened, rigid, hose-like, and when palpated seems to lack a lumen. The serosa shows various degrees of hyperemia and plastic exudate. The mesentery of the involved ileum is thick and boggy and edematous. Perforations may result in fistulas or matting together of the various loops; when opened, the resected bowel reveals marked thickening of the bowel wall, marked narrowing of the intestinal lumen and mucosal ulceration, with hyperplasia. All layers of the intestine are thickened but the submucosa shows the greatest increase in breadth.

SYMPTOMATOLOGY

The symptoms depend on the stage and extent of the disease. In acute ileitis the symptoms suggest acute appendicitis or peritonitis. In the chronic cases the symptoms suggest mild ulcerative colitis with diarrhea and cramps, and in the advanced stages perforations with abscess or fistula may be present. Fever is present in the acute but is less marked in the chronic stages of the disease.

PHYSICAL EXAMINATION

Physical examination may reveal a mass in about 50 per cent of the cases. Tenderness is generally present and the x-ray findings are characteristic. Kantor,[12] introduced the term "string sign" for the marked narrowing of the lumen of the ileum. Often a defect can be demonstrated in the cecum, caused by the pressure of the thickened ileum and mesentery against the mesial portion of the cecum and colon. Smithy's cases showed no string sign in the acute phase and all his cases made complete recovery.

TREATMENT

The acute phase of ileitis should be treated medically. The treatment of the chronic stage of the disease is surgical.[9] Some physicians prefer ileo-transverse colostomy with exclusion, while others prefer resection of the diseased area. The latter carries a much higher mortality.

SUMMARY

1. A case of ileocolitis with involvement of the cecum and subsequent migration is presented.
2. Sulfonamides and penicillin seemed to control but not cure the infection.
3. Improvement followed the use of emetin and carbarsone.

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MEDICAL PROGRESS:

Recent Progress in Pulmonary Mycotic Infections*

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THIS discussion is limited to coccidioidal infection and certain aspects of pulmonary calcifications associated with sensitivity to histoplasmin. We do not infer that progress has been restricted to those subjects. It continues in actinomycosis, blastomycosis, sporotrichosis and moniliasis as well as in the superficial mycoses. Restriction of space necessitates focusing our attention.

For those in the West, coccidioidal infection poses the outstanding problem of pulmonary mycoses. It is the only one yet recognized as occurring significantly within this area, although we do see sporadic actinomycosis. The status of knowledge regarding coccidioidal infection prior to these recent developments was admirably summarized by Beck, Dickson and Rixford in 1931.[4] The one noteworthy advance between that monograph and our present era was the recovery of *Coccidioides* from soil near Delano, Kern County, by Stewart and Meyer.[74] Then, just ten years ago, the "renaissance period in the study of coccidioidomycosis" [54] was ushered in by the discovery of Gifford[36] and Dickson[23] that benign coccidioidal infection could occur in the form of coccidioidal erythema nodosum ("Valley Fever"). Subsequent reports[18,28,44,48,66,73,79] furthered our knowledge regarding this entity, gave significant evidence regarding the epidemiology of coccidioidal infection and confirmed the importance of the coccidioidin skin test. It was during this same period that the coccidioidal endemic area was proven to extend beyond the confines of the San Joaquin Valley and even of California. Also, the importance of pulmonary cavitation began to be appreciated.

The greatest stimulus to our knowledge, however, came with the introduction of vast numbers of susceptible military personnel into the arid southwest because of its ideal training conditions. The potential dangers were appreciated in the Surgeon General's Office and the Air Surgeon's Office by such men as Generals S. Bayne-Jones and Charles R. Glenn and Dr. Francis G. Blake, president of the Army Epidemiological Board. Their prompt action insured a pattern of study and control which added significantly to our knowledge and minimized infection and death. Moreover, moving into this picture was Army physician personnel with fresh viewpoints and great energy. Their contributions are continuing as they carry this knowledge into civilian life. In the over-all picture should be mentioned the splendid review of literature prepared by Forbus and Bestebreurtje[34] and the monograph prepared by Lee, Nixon and Jamison[49] which succinctly summarized the then current knowledge. At this point it seems desirable to indicate certain specific aspects of this newer knowledge.

One of the most important outgrowths of the war experience has been better recognition of the coccidioidal endemic area. The distribution of coccidioidal infection up to this period was critically reviewed in 1942 by Schenken and Palik[62] and in 1943 by Baker, Mrak and Smith.[2] Previously reported isolated cases or coccidioidin sensitizations originating in Texas,[10a,33,51,71a,b] Arizona[8,29,30,59,76,85] and California outside the endemic area[2,4,48] have been extended by civilian and military experiences. In Texas the area extends along most of the Mexican Border and includes a large part of western Texas.[64,10b,40,49,71c] It covers southern New Mexico and southern and central Arizona.[1,3,24,49,50,77] The southern tip of Nevada and southwest Utah also seem included. In California the most highly endemic area is the southern San Joaquin Valley. Further north at Merced[70] and Modesto[12] the incidence becomes very spotty. The endemic area along the west side of the Valley extends farther, approximately to Tracy. The endemic area spreads into and over the Coast Range.[19,65] Although the infection is seen in the vicinity of Paso Robles and through Santa Barbara and Ventura counties, the area does not reach the coast. The status of southern California is not well delimited. Certainly there are spotty endemic areas in San Diego County[53] and also in San Bernardino and Riverside counties.[39,82] These facts coupled with the knowledge that merely driving through an endemic area can result in infection mean that the infection must be kept in the differential diagnosis by most physicians in the Western States. With such a peregrinating public, physicians throughout the entire country may occasionally see such a patient.

The question of where the fungus multiplies in nature is not settled. The endemic areas are arid or semi-arid. The months of July through October when it is dry and dusty provide maximal incidence. Minimal incidence occurs during the wet season.[66,70] Actually, considerable reduction in infection can be accomplished on military installations by dust control measures.[70] These facts bespeak the infectivity of the minute arthrospores and chlamydospores of the mycelial phase of *Coccidioides immitis*.[2,25] Moreover the

* This review is based on continuing investigations of coccidioidomycosis conducted by the Commission on Acute Respiratory Diseases, Army Epidemiological Board, Office of The Surgeon General, U. S. Army, Washington, D. C., at the Department of Public Health and Preventive Medicine, Stanford University School of Medicine, San Francisco, California.

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fungus has been recovered from soil.[24a,69,71] Emmons[24a,b,c] has suggested that certain wild rodents, notably pocket mice, may become infected, die, and in their carcasses the mycelia develop from the "spherules" (sporangia) of the "parasitic" phase. As he indicates, this examination of wild rodents by the experienced who can avoid the tularemia and plague so frequently encountered in coccidioidal endemic areas could provide a means of delimiting coccidioidal endemic areas. However, many would consider that a high infection in rodents would be anticipated in view of the frequent infection in humans,* cows,† sheep[5] and dogs[31] of endemic areas. Thus the rodent reservoir theory is interesting and stimulating, but it would seem fair to consider the answer as not yet settled.

Military studies[38,39,72,77,82] permitted estimation of the frequencies of the different manifestations of coccidioidal infection. At one extreme is the person with completely asymptomatic or "inapparent" infection. Such an infection can be demonstrated only by the "conversion" or "changeover" from negative to positive coccidioidin. While dosage and other factors may influence this ratio, in the southern San Joaquin Valley approximately 60 per cent of "natural" infections fall in this category. Even under conditions optimal for diagnosis only one-quarter of the infections produce clinically diagnosed disease. Around 4 per cent of the infections in white males and 10 to 25 per cent of the infections in white females are accompanied by the erythema nodosum or multiforme of classical Dickson-Gifford "Valley Fever." The proportion of these manifestations of hypersensitivity in clinically diagnosed *disease* is approximately five times as high. Various authors[39,77] have not realized that these estimates agree closely with their own, viz., that approximately 20 per cent of the clinically diagnosed cases of coccidioidal infection have erythema nodosum or multiforme.

Disseminated, "secondary" or progressive coccidioidal infection are other names for the long-recognized coccidioidal granuloma. These Army studies have indicated that approximately 1 in 400 coccidioidal *infections*, or 1 in 100 cases of diagnosed *disease* in white adult males, disseminate. The Army experience[47,50,63,72,82] also confirms the belief[36b] that there is a racial susceptibility to progressive disease. Even under identical conditions of housing, nutrition and medical care, the frequency of dissemination in coccidioidal infections and diagnosed cases of Negroes is at least ten times that of the whites.[72]

Other complications of coccidioidal infection are pleural effusion and spontaneous pneumothorax. The former, while not usual is not rare; spontaneous pneumothorax is rare. However a really important complication of the primary infection which is sometimes confused with progressive disease is coccidioidal pulmonary cavitation.

Within the past six years we have come to recognize the frequency of coccidioidal pulmonary cavitation. Prior to Winn's[83a] article on 13 such patients, occasional cases[29,86] had been reported. The unique opportunities in the military service for following the pathogenesis of the cavities by serial x-rays have yielded clearer understanding of the evolution of these cavities. Colburn's[16] study of cavity formation in three cases has been extended greatly by Jamison's[47] study of 35. Sweigert, Turner and Gillespie[77] also have described their experience with the development of these cavities. It is to be hoped that Verne R. Mason's unpublished studies as Consultant in Medicine to the Ninth Service Command will be followed through.

The diagnosis of these cases is frequently difficult since they may be sensitive both to tuberculin and to coccidioidin and their coccidioidal serology is frequently negative. In this event, only recovery of the fungus can establish the etiology. All investigators have agreed that these patients have a high degree of immunity and very rarely disseminate. Most have no symptoms and rarely should anything be done to them. The usual indication for intervention is persistent hemoptysis. The experience of Denenholz and Cheney[22] in the beneficial effect of phrenic crush has been in line with our findings. In selected cases[58,84] pneumothorax may be used. However, the indication should be absolute and one should recognize that rarely hydro- or pyopneumothorax may ensue. Moreover, some cavities not only do not close but a few actually increase in size under pneumothorax. Successful lobectomies and lobe resections for coccidioidal cavities have been carried out at various military hospitals. While the accounts have not been published, they revise our previous opinion[67,58] that such procedures are contraindicated. However, not even chemotherapy and other adjuncts of the new techniques of intrathoracic surgery make it a casual undertaking. Most pulmonary cavities will close spontaneously and very few of those which remain open seriously impair health. Their danger of dissemination is negligible.

Various articles* have indicated currently accepted methods for diagnosis of coccidioidomycosis. The coccidioidin skin test continues to serve as the first step in diagnosis. In coccidioidal erythema nodosum a 1:1000 or 1:10,000 dilution is generally sufficient. In undisseminated active infections, 1:1000 coccidioidin[38,77,82] is usually adequate. For surveys, 1:100 is probably advisable.[68] While vesiculation is frequent with such a concentration, there is no danger of disseminating or reactivating an infection, although in relatively recent infections a bout of erythema nodosum may be precipitated.[48,68] As the antigenicity of coccidioidin is negligible, it should not be withheld for fear of sensitizing or of evoking humoral antibodies which would interfere with serological tests. Results of the coccidioidin test are necessary for adequate interpretation of serological findings. Negative skin tests may result when they are performed too early. In 1:1000 dilution the coc-

*References 36c, 44, 48, 66, 70.
†References 4, 5, 6, 20, 37, 75.

* References 13, 22, 38, 39, 65, 67, 68, 77, 82, 83.

cidioidin may be negative as long as six weeks,[77] although this would be very unusual. We[68] have found that during the first week of illness, one-sixth fail to react, while during the third week the non-reactors with undisseminated infections fall to 1 per cent. On the other hand, 70 per cent of those with disseminated infections fail to react to 1:100 coccidioidin. Jacobson,[45] who pioneered its diagnostic use in coccidioidal granuloma patients, advocated 0.3 ml. of *undiluted* coccidioidin. Unfortunately, the cross reactions become much more frequent with dilutions of 1:10. Strong coccidioidin sensitivity does occur in some patients who disseminate.[68] Very frequently the sensitivity then wanes. It may be reestablished with clinical improvement so the test has some prognostic value. There is difference of opinion as to the duration of sensitivity. Cheney and Denenholz[12] have presented evidence that the sensitivity is rapidly lost when people leave coccidioidal endemic areas. However, others[66,68] have reported dissimilar experience which would indicate that sensitivity is maintained at "readable" levels over many years and that duration of sensitivity is probably independent of exposure to the fungus. The studies of Butt and Hoffman[9] have demonstrated a correlation between sensitivity to coccidioidin and coccidioidal autopsy lesions analogous to that seen in tuberculosis. The undiluted coccidioidin seems stable almost indefinitely[68] and even diluted if kept uncontaminated, it is potent for months. However, contamination, subcutaneous instead of intracutaneous injection, faulty reading and biologicals adsorbed on syringes account for errors which may confuse the test. Moreover, while there is no cross reaction with tuberculin, there is rare cross reaction with some other agents[67] typified by histoplasmin.

When the coccidioidin test has been performed, if it is positive and there is clinical evidence of an active coccidioidal infection which is not disseminated, serological tests† may be useful. If dissemination is suspected, even a negative coccidioidin warrants these follow-up tests. In view of the persistence of coccidioidin sensitivity, a mere positive coccidioidin is no indication for serological tests. Moreover, unless dissemination is suspected, a negative coccidioidin should screen out the serological test. In patients who do not disseminate, the humoral antibodies are not present prior to development of coccidioidin sensitivity. With very mild infections, serology may never become positive. Generally, precipitins develop earlier and vanish sooner than do the complement fixing antibodies. The latter appear to have important prognostic value, for only very rarely are they negative in progressive disease.

Identification of the causative organism, *Coccidioides immitis*, provides conclusive diagnosis. Demonstration of the doubly refractile spherule or "sporangium" with endospores and without budding is possible in tissue sections. Unfortunately, unless one fulfills these criteria, errors do occur. Recently, DeLamater and Weed of Mayos[21] believed they demonstrated budding of *Coccidioides* in animal tissue. These confusing structures, noted by other investigators, are probably adherent fungus cells. They may result from incomplete separation of sporangia developed from injected mycelial fragments[2] or from incomplete cleavage or separation of adjacent endospores of sporangia.[26] However, the conservatism of the Mayo workers is certainly justified in demanding the identification of endosporulation in the sporangia. These observations also emphasize the hazards of diagnosis by coverslip examination of sputum or pus. While culturing is hazardous because of the frequency of laboratory infections when mycelia are handled, structures in sputum or even pus which are thought to be *Coccidioides* frequently are not. Besides the usual Sabouraud's or malt extract media, useful differential media[80,67] are now available. The suspected culture should be injected into mice or guinea pigs[67] to confirm the identity. Tager[78] has suggested intranasal instillation and in his hands the technique has appeared successful. Because of the theoretical risk of infection through expulsion of droplets containing the suspension, we have continued to inject the suspension intraperitoneally in our mice. The suggestion has been made by Wilhelm[80] that the suspending fluid be introduced by needle and luer through the cotton stopper if the fungus has been grown on test tube slant. Particularly in patients with pulmonary cavities wherein both tuberculin and coccidioidin tests are positive and complement is not fixed, the only hope of diagnosis is by demonstration of the etiological agent. In this event, there is no substitute for coccidioidal cultures. The point recently emphasized by Cherry[13] that active tuberculosis and coccidioidomycosis may coexist also should be borne in mind.

The elevation of the sedimentation rate with active coccidioidal infection has been mentioned frequently. It is useful in following the course of the infection. While not diagnostic, the eosinophilia which often accompanies coccidioidal disease may be a helpful lead. Willett and Oppenheim[81] recently emphasized that this eosinophilia may result in confusion of coccidioidomycosis with Loeffler's syndrome of transitory pulmonary infiltration associated with eosinophilia. One of their coccidioidal patients had a record breaking 89 per cent eosinophiles in a total white count of 49,650. In spinal fluid from patients with coccidioidal meningitis the cells are, as in tuberculous meningitis, predominantly lymphocytes. However, in the relatively few polymorphonuclear cells there is frequently a disproportionate number of eosinophiles. Even more useful in differentiation is the frequency of the "paretic" form of the colloidal gold curve. Allusion has already been made* to more recent contributions to our knowledge of the roentgenological aspects of coccidioidal infection. Others[7,15,60] also have added to the basic information in which Carter[11] pioneered. While not diagnostic, the roentgenogram is another aid in alerting the physician.

† References 13, 22, 38, 67, 77, 82, 83.

* References 16, 22, 30, 38, 47, 49, 58, 77, 82, 83.

As yet no specific drug is available for treatment. In turn the sulfonamides, penicillin and streptomycin have failed. Streptothricin[61] like tyrothricin may aid in superficial lesions. Both antibiotics are too toxic for systemic use. Coccidioidin in various forms continues to be used at times and in some instances possibly helps. However, it is very difficult to assess the efficacy of treatment in a condition where the fatality rate is 50 per cent. There is even on record one apparent recovery from coccidioidal meningitis. Every known therapeutic measure has been attempted in treating this condition but without success. This patient reported by Sweigert[77] had no treatment other than general supportive measures. It is fair to say that only in the hands of Jacobson[46] has a high level of cures by vaccine or coccidioidin been attained. The plan of restricting activities while the patient has fever and other signs of active infection, elevated sedimentation rate, rising titer of complement fixation or the roentgenological evidence of progressive pulmonary involvement remains the only suggestion. Even the beneficial effect of rest has been impugned by some skeptics. Nevertheless, even if dissemination has occurred, rest and the regime prescribed for the tuberculous continue to seem advisable.

The association of pulmonary calcifications with coccidioidal infections has been recognized for some years. Cox and Smith[17] presented experimental as well as autopsy material establishing its occurrence. These autopsy findings have been extended greatly and correlated with coccidioidin sensitivity by Butt and Hoffman.[9] The studies of Aronson and his associates[1] not only proved there was no cross reaction between tuberculin and coccidioidin and verified the geographic localization of coccidioidal infection but also gave strong evidence supporting frequency of pulmonary calcification due to coccidioidal infection. Our conception of complete specificity of coccidioidin was supported by the findings of others.[52] However, we received reports[55] of reactions in Ohio to stronger concentrations of coccidioidin. Moreover, Emmons[24b] discovered cross reaction between coccidioidin and haplosporangin, a comparable product from his Arizona fungus, *Haplosporangium parvum*. Then in our Army studies we began obtaining occasional "equivocal" and even rare positive reactions to 1:100 coccidioidin in soldiers immediately after they detrained. They denied ever having been in the West previously. These reactions occurred in personnel especially from the Ohio River area but also from most of the Mississippi Basin. Accordingly in 1943[67] we called attention to this fact and mentioned that it corresponded to the areas of recognized histoplasmosis and of frequent pulmonary calcification in the tuberculin negative.

Christie and Peterson undertook the preparation of histoplasmin and the careful investigation of the association of sensitivity to histoplasmin and pulmonary calcification. They also sought for a syndrome of histoplasmosis comparable to primary coccidioidomycosis. Their first paper[14a] presents an excellent review of the problem of pulmonary calcifications in non-tuberculous. In a group of 181 Tennessee children, they noted pulmonary calcifications in 44 per cent. Of these 78 children with calcifications, 62 per cent were histoplasmin positive and tuberculin negative, while only 6 per cent were tuberculin positive and histoplasmin negative. They presented other data supporting this association of histoplasmin sensitivity and pulmonary calcification. Subsequent papers[14b,c] have extended their observations and among 610 Tennessceans with pulmonary calcifications, 71 per cent were histoplasmin positive, tuberculin negative and 3 per cent tuberculin positive, histoplasmin negative. Sixteen per cent reacted to both materials. The age distribution of pulmonary calcification followed that of histoplasmin sensitivity rather than that of tuberculin sensitivity. Their sectional distribution of histoplasmin sensitivity within Tennessee paralleled the pulmonary calcifications. Their studies of geographic distribution by states also supported an association between the histoplasmin sensitivity and pulmonary calcification. However, they have been careful to indicate that as yet conclusive proof of causal relationship between pulmonary calcifications and histoplasmosis remains lacking.

The exceedingly extensive studies of the Tuberculosis Control Division of the United States Public Health Service are bringing a tremendous volume of evidence for this association. Palmer's initial investigation[57a] included 3,105 student nurses with 294 pulmonary calcifications. In the latter, only 6.8 per cent were tuberculin positive and histoplasmin negative while 67 per cent were histoplasmin positive and tuberculin negative. Only 1.2 per cent reacted neither to tuberculin nor to histoplasmin. Thus the experiences of the two groups are in substantial agreement. Palmer's subsequent paper[57b] dealing with the geographic differences in histoplasmin sensitivity in over 8,000 nurses indicated that the highest prevalence of histoplasmin sensitivity is in the central part of the United States.

Recognizing that Kansas City is an area of very high histoplasmin sensitivity, the Tuberculosis Control Division initiated very detailed studies in that area. One must read these papers to appreciate their careful, critical and cautious presentations. However, Furcolow et al[35] showed that in Missouri as in Tennessee, the percentage of reactors to histoplasmin increases with age, with pulmonary calcifications paralleling the rise. They found that among whites the percentage of reactors increased from five at age of two years to nearly 70 at 18 years. Consistently, the percentage among males was slightly greater than among females and among whites slightly higher than among Negroes. Ferebee and Furcolow[32] recently studied histoplasmin reactions in Kansas City siblings. Within the same family they found the factor appeared to be a broad one, "less localized than one limited by family environment." High[41] has reported that splenic calcifications in Kansas City also appeared to be associated with sensitivity to histoplasmin. Eighty per cent of the school children

of that city who had pulmonary calcification reacted to histoplasmin. Seventy-nine per cent of those with splenic calcifications were histoplasmin- reactors. These were twice as great as the histoplasmin reactivity of the general school population.

Roentgenographic descriptions of these calcifications are contained in various recent publications.[14a,41,42,87] Most noteworthy is the frequency with which *disseminated* (miliary or multiple bilateral) calcifications are associated with histoplasmin sensitivity. In the series of High, Zwerling and Furcolow[42] wherein 108 persons with disseminated calcifications were tested both with tuberculin and histoplasmin, 96 per cent reacted to histoplasmin, only 10 per cent reacted to tuberculin and none reacted only to tuberculin.

The other group of workers leading in the studies of histoplasmin sensitivity and pulmonary calcifications is at the National Institute of Health. It was the histoplasmin prepared by Emmons of this group which Palmer used in his studies. Neither the Christie-Peterson Vanderbilt team nor the Palmer-Furcolow Tuberculosis Control Division group is ready to commit itself to *Histoplasma capsulatum* as the sole, or even dominant etiological agent responsible for the histoplasmin sensitivity associated with pulmonary calcification. The group at the National Institute of Health is even more conservative. In their recent publication, Olson, Bell and Emmons[56] could not prove that there was statistically valid correlation in Loudoun County, Virginia, between pulmonary calcification and sensitivity to histoplasmin. Loudoun County has had a high incidence of proven histoplasmosis (four fatal human cases). Three Loudoun dogs and one mouse also were demonstrated to have been naturally infected with *Histoplasma*. While 83 per cent of the inhabitants tested reacted to histoplasmin, pulmonary calcification seemed to be more frequently associated with tuberculin sensitivity and history of contact with open tuberculosis. Moreover, Emmons, Olson and Eldridge[27] also have pointed out the cross sensitivity which exists between histoplasmin and blastomycin. Although coccidioidin shared in this to a degree, it was not sufficient to be very disturbing. Coccidioidin and haplosporangin are more apt to cross react. By studying the potency of the appropriate material, Howell[43] of the Kansas City group believes it is possible to ascertain dominant sensitivity. This has also been our experience. However, at the present stage there is danger of uncritical over-enthusiasm. This whole subject is developing rapidly, changing from month to month. Of paramount interest is ascertaining what infectious agent or agents are responsible for histoplasmin sensitivity. In all probability the etiology is mycotic and the infection or infections are so benign they are even more frequently inapparent than is coccidioidomycosis. Once the specific facts are known, there will probably be little point in attempting to pigeon hole or classify as long as one is sure that he is not dealing with tuberculosis. It is tuberculosis of which we must continue to beware. Although in many regions mycotic infections seem well-nigh universal, fortunately serious mycotic disease is rare.

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California Cancer Commission Studies*

Chapter V

Diagnosis and Radiation Therapy of Cancer

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CANCER is such a desperate disease and its diagnosis and treatment fraught with such difficulties that it might be wise to consider *consultation normal procedure* in its management.

The consultation has first to decide if it be cancer, and determine its location, extent and type. The diagnostic radiologist will often have something to offer.

Next, the consultation has to settle on a method of treatment. The radiologist has a different function here, for he is speaking as a therapist. In fact it may not even be the same person, for not all radiologists practice both diagnostic and therapeutic radiology. If definitive treatment of the cancer is deemed possible, it will be surgical or radiological, or both, (medicinal treatment of cancer is as yet hardly developed—nitrogen mustards and radio-phosphorus are about all the drugs we have so far). The surgeon or the radiologist may take over as a practitioner of the medical art according to his specialty, or they may team up where radiation must be applied by surgical approach, and may come together again in face of threatened or actual recurrence.

Now these consultations may be formal ones, but many a one is quite informal. The medical profession has such a difficult job to do that every physician should stand ready to lend a helping hand to his colleague. Many consultations are given without fee, and gladly. It is not hard to tell when a physician is asking help for his patient's sake, and none of us need be self-conscious about the insufficiency of his own knowledge. This is not saying that it is other than dishonest to "mooch" an opinion from a fellow practitioner, that in all reason the patient should expect to pay for. And if the consultation is in fact paid for, then it should be the patient who pays it and not his physician.

This brings us to the most important point about consultations concerning cancer. *The first consultation should be had before treatment of any kind is decided upon.* It is very destructive to morale to abandon a method of treatment once it has been started. It is most distressing for a surgeon to be called to see a patient already under irradiation therapy, or for a radiologist to be called to advise and devise irradiation for a patient who has just been operated upon. The initiation of one kind of treatment rules out some range of other treatment, renders ineligible some modes of combinations which could have been done if engaged in from the start. And who can now tell if some one of these might not have been favorably considered? They can now hardly be mentioned—for who shall tell the patient that the course pursued was not in fact the wisest? In cancer, of all diseases, the patient's morale most needs continuous and thoughtful support.

DIAGNOSTIC RADIOLOGY

There is one roentgen examination peculiarly pertinent to cancer patients and cancer suspects, namely: The Standard Survey. This is a search for metastases in lungs and bones, where alone the x-ray is efficient in discovering them. The survey has in fact not been standarized. For some cancers, as skin, respiratory apparatus, gastrointestinal tract, testicles and uterus, metastasis to bone is uncommon and stereo chest films (together with local films of the tumor site) are a fair "survey." For others, such as breast, thyroid and kidney, the bones are a likely site. Most radiologists would consider sufficient for a "standard" survey: Stereo chest, stereo pelvis, sterco skull (lateral), lateral thoracic and lumbar spine. The pelvis films can well include the top 20 cm. of the femora.

Metastatic habits of various types and locations of cancer are noted in the sections concerned. Some general and particular radiological facts and convictions are worth bringing together in this chapter.

BONE TUMORS

Bone tumors are definitely in the realm of roentgen diagnosis. However, roentgen evidence standing alone is not to be trusted, either as to neoplasm *vs.* inflammation, nor as to malignant *vs.* benign, nor as to operable *vs.* irradiable.

Exposures of two different densities are often helpful in bone tumors.

Laminagrams will sometimes reveal an abscess cavity, differentiating sclerotic osteomyelitis from osteogenic sarcoma.

(Therapeutic test of penicillin, bismuth and maybe iodide will sometimes prove a bone tumor to be gumma. This has been known to occur even with a negative Wassermann).

CHEST

A *lateral view* should be routine when thinking of pulmonary cancer. It would be false economy to give up the lateral to get a stereo. Rather, choose to accept a plain anterior and use the second film

* Organized by the Editorial Committee of the California Cancer Commission.

for a lateral. (In survey for metastasis, just stereo anterior is the usual choice).

Fluoroscopy is needed in cases of tumors in the chest to determine:

1. Pulsation
2. Separation from hilar structures
3. Involvement or displacement of esophagus
4. Phrenic paralysis
5. To detect fluid. This is often hard to be sure of in small quantity. It can be confirmed by a posterior film taken with horizontal ray, the patient lying on the suspected side, supported on a pad so that the axillary ribs show on the film. A wafer grid and a heavy exposure are essential.

Iodized oil may demonstrate an intrusion into a bronchus, or an obstruction.

Demonstration of bronchiectatic cavities may show the cause for a shrunken lobe that would otherwise be blamed on a blocked bronchus.

The oil cannot be expected to run into abscess cavities.

Kymograms are made to demonstrate pulsation. Tumors can, however, transmit pulsation and aneurysms can be blocked with clot, preventing pulsation. Expansile pulsation can perhaps be differentiated from transmitted pulsation by *kymography*, especially if done in two directions (vertical and horizontal travel).

Laminagrams are sometimes of value in locating and identifying a pulmonary or a bronchial tumor.

BRAIN

Displacement of a calcified pineal reveals a "space filling lesion" which can be hemorrhage or cyst as well as tumor. It can also be produced by shrinkage of a lobe: in fact the first "pineal shift" in the literature was due to cerebral shrinkage after apoplexy. To demonstrate lateral "shift" one needs posterior or anterior projections absolutely true, without any obliquity. It is probably better to judge the midline from nasal septum and lambda and odontoid (especially as seen in stereo) than to measure from pineal to temples or parietes. In lateral view one refers to Vastine's statistics for the range of normal position. (Figure 1.)

Laminagraphy can reveal a calcified pineal, otherwise lost in the density of midline shadows. It is best done in this case with a small angle of swing.

Air (or gas) encephalography and *ventriculography* is often essential to localize a brain tumor. However, there are cases where clinical evidence is almost incontrovertible, rendering air unnecessary.

Even with the extra operation (trephine), ventriculography is probably safer than encephalography (spinal air injection), because any subsequent dangerous increase in pressure can be promptly relieved by a trochar through the hole already made.

STOMACH

Roentgen differentiation of cancer from benign lesions is often uncertain. Ulcers close to the pylorus

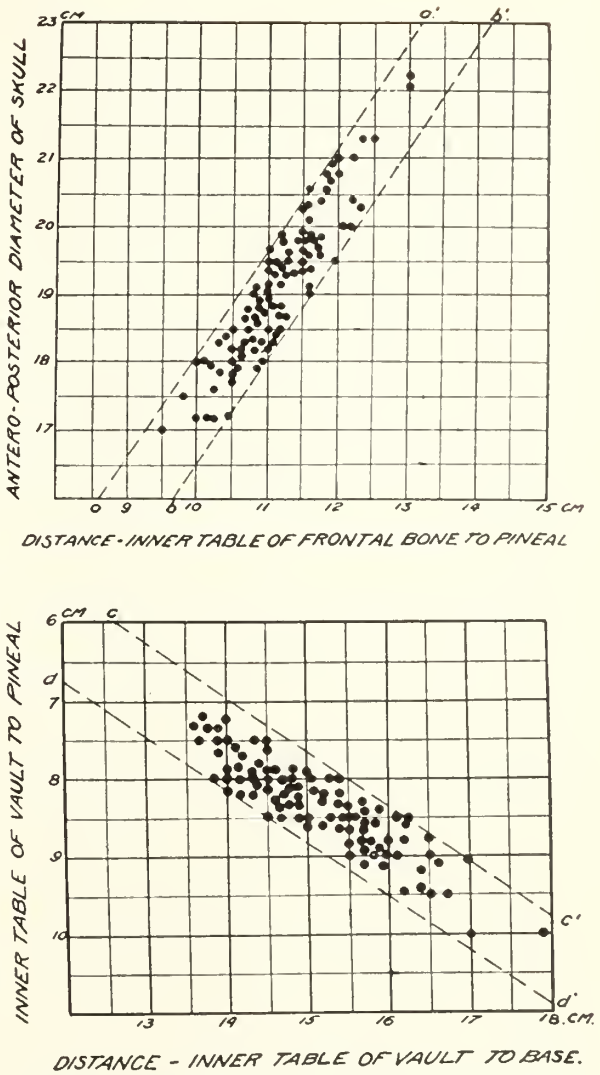


Figure 1.—Vastine's data for range of position of the (calcified) pineal as seen in lateral skull films of normal subjects.

are reputedly more likely to be cancerous, and so are large ones anywhere, but more than this is needed for diagnosis. The rare ulcer that lies precisely on the greater curvature is cancer. Ulcers of the stomach should heal in a few weeks on good medical management. If they do not, they should be explored, lest they be in fact cancer.

Cancers of the stomach are apparently not coming to operation at an earlier stage now than they did 20 years ago. Nevertheless we should keep on trying. Gastrointestinal examinations on apparently well persons have turned up as many as one case of cancer in 500 and as few as one in 2,500.

Large size of tumor as shown in x-ray should not discourage one from operating, for operability is determined not by size but by extent of spread (metastasis). A bulky tumor is more apt to produce symptoms and come to diagnosis before metastasizing than a slow-growing, ulcerated one.

SMALL INTESTINE

The ileum and jejunum and lower portions of the duodenum have very few cancers, and those few are hard to diagnose. Films every 30 to 60 minutes after barium meal are a help. The so-called *small intestine enema*, given through a tube passed (with patience) through the pylorus into the duodenum, can sometimes demonstrate the entire length of small intestine in a few minutes. Intussusception in an adult should lead to suspicion of tumor.

COLON

Air (or oxygen) contrast added to the standard barium enema should be routine in case of suspected tumor, or where there has been bleeding by bowel. Air will often drive barium through a constriction. It will often show a polyp that is missed in first examination because completely surrounded by the barium. Air embolism is so extremely rare from inflation of the colon that we do not account the procedure dangerous. (Air is more dangerous in the bladder). Preliminary catharsis is essential, lest a scybala be mistaken for a polyp.

It is good practice to use oxygen instead of air, for it is more rapidly absorbed, shortening the patient's period of discomfort.

The films can well include two made with x-ray directed horizontally, with patient lying first on left side, then on right side.

URINARY TRACT

Excretory urography should be done in all cases of urinary bleeding. This is often a late symptom of cancer, however, and we wish we had an earlier clue, for kidney tumors often remain silent for a long time. Excretory urograms have some advantages over retrograde pyelograms, notably absence of pressure distortion and of pyelovenous and pyelolymphatic back flow, and good demonstration of muscular activity of pelves and ureters. But all the drugs used have some danger. One that is very much used (diodrast), because accepted most smoothly, has produced several deaths (in some millions of injections).

Not infrequently a suspicion turned up in excretory urograms requires confirmation by *retrograde pyelography*.

Renal cysts and tumors produce similar deformities. Polycystic kidneys are usually bilateral but not always.

The responsibility in renal diagnosis is often heavy, for the surgeon may have to remove the kidney on little more than roentgen evidence, knowing that he may still not be sure of the diagnosis after he has actually exposed the kidney to inspection and palpation. It has been said: "No exploratory operation for renal cancer," meaning that if one suspects cancer strongly enough to expose the kidney, he must go ahead and take the kidney out, realizing full well that this policy will result in removal of a few kidneys that prove after all to hold no tumor.

PNEUMOPERITONEUM

Pneumoperitoneum is seldom done. The risks of peritoneoscopy or of diagnostic laparotomy are so small that one would usually choose these instead, if diagnosis be not otherwise attainable.

THOROTRAST

Intravenous injection of thorium dioxide to discover tumor in liver (metastases usually), is under suspicion because the quantity of thorium used, measured in terms of radioactivity (a few microcuries) is similar to the known serious dose of radium in bones. Also some animal experiments have shown its capacity to induce sarcoma. However, a number of patients have carried thorotrast in the liver (and spleen) for five years or more without disaster. Its use is probably warranted whenever the diagnostic evidence it will give is important for the management of the case.

SERENDIPITY

It is a discouraging feature of cancer that it is so often painless in its early stages. Many patients carry their cancers for a long time before symptoms develop that are sufficient to call any attention to the tumor. Although few cancers are in such location as to be diagnosed by x-ray, occasionally a cancer will reveal itself in a roentgen examination done for quite other reasons. It may lie unobtrusively "at the corner of the film," but if the radiologist overlooks it, the patient loses a chance to have his cancer treated at a time when it is symptomless, therefore early, and therefore promising for cure. Radiology should always be practiced with at least half an eye to picking up such things.

RADIATION THERAPY

Irradiation has a broad though limited usefulness in the treatment of cancer. The results run from curative through temporary arrests and palliation down to frank failure. Nevertheless, the average experience, or what we call the "chances" for a particular patient, can be very much bettered by a good understanding of the physical and biological foundations, a wise clinical judgment and a skillful application. These, then, are the qualifications that must be demanded of the radiologist to whom a patient is referred for therapy. The more the referring physician knows about these things, the better for his consultations with the radiologist on the individual patient.

Radiation is destructive to living tissue. The nucleus is much more sensitive than the cytoplasm, especially when in mitosis. The range of radiosensitivity is enormous. Bacteria require many thousands of roentgens to kill them, some insects' eggs only a few hundred.

Radio-sensitivity of normal human-tissues extends from the supersensitive lymphocytes, (about ten times as sensitive as skin epithelium), to the very resistant completely differentiated muscle and nerve cells, (about ten times as radio-resistant as skin epithel-

ium). The endothelium of blood vessels is in the middle of the range and what one usually observes after irradiation of muscle or brain is actually due to the roentgen injury to the blood supply.

RADIO-SENSITIVITY OF NEOPLASMS

In general a neoplasm is more radio-sensitive than its tissue of origin, while still remaining of the same order of sensitivity. A malignant neoplasm is likely to be more radio-sensitive than its benign homologue, and the more anaplastic the tumor is, the more radio-sensitive it is likely to be.

Radio-curability is not the same thing as radio-sensitivity, and the great malignancy and spreading habit of anaplastic cancers usually more than offsets their comparative radio-sensitivity. The range among neoplasms is large. Leukemia might be affected by 10 r. A chondroma would remain uninfluenced by any ordinary clinical dose.

DOSAGE

The dose and the anatomical and temporal details of its application are the essence of the art of radiation therapy. It may seem wise to give a large dose to a radio-sensitive tumor to lessen chance of recurrence. One cannot, however, better the chances in a more radio-resistant tumor by going to enormous doses, even though the patient survive the severe reaction. Except for very small tumors there seems to be a best dose, beyond which the chance of recurrent cancer increases again.

The roentgen (r) is the unit of x-ray exposure (dose). It is measured by the ions it produces in air. 2,100,000,000 pairs per cc. Flesh being 800 times as dense, 1 r produces some 1,600,000,000,000 pairs of ions per cc. in tissue. This amounts to about 83 ergs of energy per cc. Dependable instruments are available to measure x-ray dose. The radiologist may do his own measurements or have a physicist come at intervals to calibrate his machines.

Tissue dose at the skin is usually augmented by x-rays scattered back from the mass of flesh irradiated. In a deep-seated tumor it is less than at the surface, because of absorption. This "depth dose" may be built up by irradiating a larger field and so scattering some x-ray into the tumor from the sides. More importantly it can be increased by "cross fire," i.e. irradiation from different sides (usually opposite sides). But by the latter strategem it can still not be built up centrally to as high a dose as at the surface.

Summation of dosage produced by several irradiations can be done only in terms of tissue doses produced at a certain place. It is misleading to add together the doses applied at several different skin surfaces. Radium dosage affecting the same volume of tissue can be added in by calculating the roentgen equivalent from the datum: 1 mg. with 0.5 mm. platinum filter gives 8.4 r per hour at 1 cm. distance.

Range of doses used in cancer therapy is not large, if one except the leukemias and lymphoblastomata. One would like to give carcinoma about 5000 r of tissue dose, spread over a few weeks' time. Some

TABLE 1.—*Order of Radio-sensitivity of Tumors*

Radio-sensitive

1. Leukemia (if it be a tumor. But, unfortunately, not radio curable.)
2. Lymphoblastomata
 a. Lymphosarcoma (considerable variation).
 b. Hodgkin's disease (great variation).
 c. Reticulum cell sarcoma.
3. Medulloblastoma.
4. "Lymphoepithelioma" (anaplastic carcinoma with lymphoid stroma).
 Ewing's tumor of bone (endothelial myeloma).
 Embryonal carcinoma.
 a. Testis (some variation).
 b. Ovary (much variation).
5. Giant cell tumor of bone (if it be a neoplasm).
 Wilm's tumor of kidney.
 Plasma-cell myeloma (multiple myeloma of bone. Its clinical response is worsened by its wide distribution).
 Hemangioma and hemangio-endothelioma.
 Lymphangio-endothelioma.
 Keloid and hypertrophic scars.

Moderately radio-sensitive

6. Epithelioma.
 a. Anaplastic (transitional cell).
 b. Epidermoid (when in mouth, tonsil, pharynx, larynx and especially bronchus and esophagus, the location worsens the clinical response very much).
 c. Basal cell (usual small size and lack of metastasis make the clinical response better).
7. Carcinoma of breast (moderate variation).
 Carcinoma of uterus.
 a. Epidermoid of cervix.
 b. Adenocarcinoma of cervix or fundus.
8. Carcinoma of thyroid (great variation).
 Carcinoma of ovary (great variation. Some pseudomucinous tumors may be radio-sensitive, about degree 4).
 Carcinoma of rectum (great variation. Mucoid type may be sensitive).
 Other adenocarcinoma (great variation).
9. Pinealoma.
 Retinoblastoma.
 Glioblastoma multiforme.
 Pituitary adenoma (non malignant).
10. Malignant melanoma, pigmented or non-pigmented.
 Rhabdomyosarcoma.
 A few anaplastic sarcomata of fibroblastic and neural origin.

Of doubtful radio-sensitivity

11. Fibrosarcoma.
 Hypernephroma.
 Myxosarcoma.
 Liposarcoma.
 Myosarcoma.
 Astroblastoma.

Radio-resistant

12. Glioma, with exceptions listed above.
 Meningioma.
 Craniopharyngeoma.
 Mixed tumor of parotid.
 Osteogenic sarcoma of bone (osteogenic or osteolytic).
 Leiomyoma (the fibromyoma of uterus usually regresses after menopause, natural or induced).
 Teratoma.
 Neurofibroma and ganglioneuroma, including acoustic neuroma.
 Ependymoma.
 Chondroma.
 Lipoma.
 Myxoma.
 Chordoma.
 Osteoma.

may be cured with two-thirds of that. Increase in dosage *far* above this level will not bring in the more radio-resistant ones and may spoil the success of some that would have done well at the 5000 r level. For very small lesions it is satisfactory to give the dose in a single sitting, in which case one uses only about 3000 r.

RECOVERY RATE

For doses to produce an erythema, the skin recovers 63 per cent in the first 24 hours. But with repeated treatments after that the recovery gets slower and slower, until after a month of small daily doses it amounts to about 6 per cent a day. At the level producing severe skin damage, the recovery is much slower. Recovery of the bone marrow (hematopoietic) from repeated small doses is even slower. Radiation injury to the gonads (producing genetic mutations) has been shown in animals not to be recovered from at all.

PROTRACTION AND FRACTIONATION OF DOSE

The recovery rate for the cutis (blood vessels etc.) is faster than for the epidermis. One can therefore kill the epidermis (and epidermoid cancer) with less concomitant dermal necrosis by giving the dose in daily small pieces. Such fractionation may spread the treatment over one to four weeks or longer. Some therapists have treated twice a day, some only twice a week. Some think each dose should be given slowly —3 to 5 r per min., but most find 20 to 100 r per min. satisfactory. "Contact therapy" at 10,000 r per minute works well on small lesions.

Nausea and vomiting follow large doses to large areas. Susceptibility varies and divided doses minimize. Hodgkin's disease seems to sensitize. Phenobarbital, 100 mg. given one hour before treatment, helps. Chloral can be used in case of barbiturate sensitization. Pyridoxin (Vitamin B_6) 25 mg. four times a day is good. Benadryl 50 mg. four times a day has worked in more stubborn cases. After a day or two the dose can be reduced. By-effects (lightheadedness, etc.) can be bothersome. Fluid and carbohydrate intake should be kept high.

Granulopenia often develops when very large areas are treated heavily. A count of 2,000 granuloeytes seems dangerous. Penicillin may seem advisable to forestall infection.

Anemia in severe degree occurs less often and usually later. It may be hard to tell whether the x-ray or the cancer has caused it.

LOCAL RADIATION INJURIES

Erythema follows irradiation of a few hundred roentgens, with latent period one to twenty days.

Epilation requires somewhat less than an erythema dose. The hair will grow in again except after injuriously large doses. Cosmetic epilation is not to be done.

Edema often appears during a heavy course of irradiation, especially in the throat. In Hodgkin's disease it may be seen within 24 hours after as little as 100 r. It seems to lessen the chances of cure.

Epidermitis, epithelitis and mucositis are the terms applied to severe benign roentgen inflammation with desquamation of the epithelium. This is what is aimed at in the definitive treatment of localized cancer of the skin or mucous membrane.

Palliation of the local reaction may require only vaseline, but often a local analgesic is needed. Nupercainal has a high incidence of sensitization—even after a negative patch test.

RADIATION ULCERS

Indolent, indurated, painful, persistent ulceration can develop after heavy irradiation, early or after several years. Sunburn or mechanical injury can be the proximate cause. Fundamentally the ulcer is due to ischemia consequent on the roentgen destruction of vascular endothelium. Second and third heavy courses of x-ray are especially dangerous.

Treatment is often ineffective. Urea crystals can dissolve the dead collagen that clutters the base of the ulcer and sometimes lead to healing. Chlorophyll ointment is very beneficial. Radon ointment seems promising. Excision will often require a pedicle graft. Split skin grafts usually fail because of ischemic base.

Cancer often develops in x-ray and radium ulcers and scars. It must be excised. It can develop years after many small doses, even without an erythema, as some of the pioneer radiologists have personally experienced.

QUALITY OF X-RAY

Quality is a matter of wave length. Soft x-rays are of long wave length, low penetrating power, and produced by low voltage. Hard x-rays are of short wave length, great penetrating power, and produced by high voltage. A therapist should have available qualities of half value layer 1 mm. (produced at about 100 kv) up to h.v.l. 1 or 2 mm. Cu (produced at about 200 kv). Supervoltage gives only a little further increase in penetration. Superiority of biologic effect has not been proved for shorter wave lengths.

RADIUM

Radium gives alpha, beta and gamma rays.

Alpha rays are used now only in radon ointment.

Beta rays make the unfiltered radium plaque an elegant tool for the treatment of small superficial skin lesions.

Gamma rays are like very hard x-rays. The radium cannon has yielded to high voltage x-ray for external application. But there remains the field of intracavitary and interstitial irradiation where radium is irreplaceable.

Radon can substitute for its parent radium. For interstitial irradiation radon gold seeds have the advantage over radium needles in that they can be left in place. The radon decays one-half in 3.85 days and is almost gone in a month, having delivered a total equivalent to 133 mg. hr. for the usual 1 millicurie seed.

MODERN DEVELOPMENTS

The *betatron* and the *synchrotron* are machines to produce beta rays of many megavolts' energy. The beta rays can be used directly, their high energy making them penetrating enough to get into the middle of the body. Or they can be directed against a tungsten target to produce super-hard x-rays. Biological experiments have been done in some number with betatron, but the clinical usefulness in cancer therapy has not yet been much explored.

Neutron rays can be produced with a large cyclotron in amounts sufficient for clinical use. They differ from x-rays in being absorbed in tissue through production of high speed protons, instead of high speed electrons. The result is a hundred-fold increase in the specific ionization (columnar density of ionization) along the ionized tracks through the cells. One of the results is that the same number of ions is some five times as effective by neutron rays as by x-rays. But it is unproven that they cure cancer better. Certainly modern therapy tubes are infinitely more flexible mechanically than a cyclotron, making precise application cross-fire clinically attainable by x-ray, and practically beyond reach for neutron rays.

Radioactive isotopes from the cyclotron on the chain-reacting pile hold almost an infinitude of medical promise. Their widest field will be for research in physiology and biochemistry by the "tracer" technic.

Phosphorus 32 has proved useful in leukemia. Whether it will replace x-ray, or to what extent, has yet to be decided. It *seems* by far the best therapy for polycythemia vera.

Iodine 130 and 131 are capable of destroying the thyroid in situ. The clinical art of using them to control Grave's disease is still in the stage of research development.

Only the rarest thyroid carcinoma (metastasizing adenoma) will pick up iodine and so be susceptible to radio-iodine therapy.

The physical and chemical and biological and medical technics in the isotope field are so complicated and difficult that their description seems quite out of place here.

At present it seems possible to predict that radioactive isotopes will prove useful in the war against cancer, not in therapy, but rather in the field of biological discovery.

Chapter VI of the Cancer Commission Studies, "Sarcomas of Soft Tissues" by John Budd, M.D., will appear in this section in the October issue of CALIFORNIA MEDICINE.

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EDITORIALS

The Dodo Flies Again

With the adjournment of the 1947 California State Legislature, and more recently with the adjournment of the first session of the Eightieth Congress, word has been passed around in some medical circles that the issue of compulsory health insurance is as dead as a dodo. While such word is reassuring, we are beginning to wonder whether we should accept it as gospel.

A few recent incidents might serve to refresh our memories and to give us pause to consider whether or not compulsory health insurance has actually died. Possibly it has only gone to sleep, to awaken at a more propitious moment.

Consider, for instance, the action of the California State Federation of Labor (A. F. of L.) in circulating a statement before the Senate Subcommittee of the Committee on Labor and Welfare, a statement which branded the California Medical Association with asserted unconsciousness to public needs and disregard for sound social betterment.

Consider, again, the State Federation of Labor in writing to every member of the California State Legislature, to blast the C.M.A. for introducing a legislative bill which would ease the burden of selling voluntary health insurance by simplifying the selling process without depriving any individual of the right of self-determination. The State Federation of Labor calls this "compulsory health insurance" which it claims is a medical scheme to channel all voluntary health insurance into the hands of the doctors.

These items are in the record now and, after a one-day spell, out of the headlines. However, they are still in the minds of some legislators. Likewise in the legislative minds are memories of a recent labor blast against Senator Robert A. Taft of Ohio, who was accused in a labor convention of being anti-labor because he had opposed a health insurance program which the convention labeled as President Truman's but which we refer to as the Wagner-Murray-Dingell Bill. Senator Taft may be vulnerable to labor's attack on other grounds but this one is something new.

The final consideration is in the program of the California State Democratic Party, which has adopted health insurance as one of its goals. This has just happened and it means that every Democratic candidate in this state may be called upon by his party to espouse this brand of social soothing syrup.

The labor actions mentioned here might be expected as a part of labor's program of demanding its own way. But when these moves impinge upon the collective mind of the law-making bodies of the country, they represent political action. When they enter that stage, they represent a problem which organized medicine must meet if socialization of medical practice is to be avoided. Medicine has the weapons available to it to wage the fight needed: all it needs is the will to use these weapons. And if the medical soothsayers have their way, organized medicine would stack its weapons behind the door, to collect dust.

If the threat of socialized medicine is properly described in simile with the dodo, we strongly suspect that the ornithologists are misinformed as to the death of this bird.

Clinical-Pathological Conference*

A 36-year-old Filipino farm laborer was admitted to the Santa Barbara General Hospital with a complaint of pain in right chest.

Present Illness: The patient developed a severe "cold" four weeks before entering the hospital. This was accompanied by pain in the right side of his chest. As told by the patient, the cold was followed by pneumonia and he was admitted to another hospital because of high fever and productive cough. In that hospital he was treated with penicillin. A chest film taken at that time revealed a right pleural effusion. The fluid was aspirated with amelioration of the clinical symptoms. The temperature returned to normal but the productive cough persisted. Repeated examinations of the sputum were negative for tubercle bacilli and pathogenic fungi. Because tuberculosis was strongly suspected, the patient was transferred to the tuberculosis sanitarium at the Santa Barbara General Hospital. During this time he had lost 15 pounds.

Past History: The patient had always enjoyed good health and there was no pertinent medical or surgical history. He had been a resident of Santa Barbara County for the past 15 years, living in the Lompoc area. He had no knowledge of his diabetes prior to the hospital admission.

Family History: Father and mother deceased—cause of death not known. Three brothers were living and well.

Physical Examination: The patient was a fairly well developed, small Filipino. He was not in acute distress. There was no evidence of dyspnea. The only positive physical finding was diminished to absent breath sounds in the right lower chest posteriorly. The left chest was negative to percussion and auscultation.

Laboratory Findings: (On admission) Hb 14 grams. RBC 4,860,000; WBC 6,050; PMN 71 per cent; Lymphs 19 per cent; Eosins 10 per cent. Blood sedimentation rate, 11 mm. in one hour. Fasting blood sugar 296 mgm. per cent. Urine, albumin—trace, sugar—4 plus; Acetone and diacetic acid—negative. Serologic tests for syphilis, Kahn and Kline reactions—negative.

Radiologic examination of the chest on admission to the sanitarium revealed an area of increased density at the level of the left third rib posteriorly; the left lung parenchyma was radiographically clear. The right lung field showed evidence of cavitation at the level of the outer part of the second and third interspaces; there was a uniform dense shadow below this level which was suggestive of a fluid level.

Course in the Hospital: The patient was treated with diet and insulin therapy for control of the diabetes. After four weeks, urine sugar reactions were negative and the fasting blood sugar levels were below 100 mg. per cent. At this time 10 units of protamine zinc insulin were being given daily. His general condition appeared improved and he gained four pounds in two months. The chest symptoms completely subsided.

On July 30, 1946, approximately two months after admission to the Santa Barbara General Hospital, he began to complain of severe frontal headaches which were not associated with nasal discharge or sinus tenderness. Three 24-hour sputum specimens were examined at this time but no acid fast bacilli or other pathogenic microorganisms were seen. Chest films on July 31 showed only a small area of fibrosis at the level of the right second interspace and the radiologist suggested that if the chest lesions were caused by tuberculosis, the disease was probably in a healed state.

The headaches continued and required codeine for relief. A blood count on August 8, 1946, revealed WBC 13,500; PMN 64 per cent; Lymphs 21 per cent; Eosins 15 per cent. The patient became progressively more confused mentally and on August 12, a spinal tap was done. Pressure, 96 cm. of spinal fluid; Queckenstedt, negative. Spinal fluid sugar 57 per cent (blood sugar 190 mg. per cent). Cell count, WBC 605; PMN 10 per cent; Lymphs 90 per cent; RBC—too numerous to count. Globulin, "marked increase." Spinal fluid chlorides, 792 mg. per cent. Colloidal gold curve, 5555554331. Blood sedimentation rate, 34 mm. per hour.

The neurologic picture was not remarkable save for increasing mental retardation. The patient developed a marked tremor and urinary incontinence terminally. He expired quietly on August 18, 1946, three months after admission.

CLINICAL DISCUSSION

DR. HOBART A. REIMANN†: The case is one of about four months' duration, beginning with a "cold," followed by pleural effusion, pneumonia and cavitation of the lung. After a period of improvement and healing of the pulmonary lesion, evidence of intracranial disturbance developed about a month before death.

From the clinical records, tuberculosis was suspected, but the initial recovery was more rapid than one would expect if it had been tuberculosis pneumonia; tubercle bacilli were never found, there was

*One of three Clinical-Pathological Conferences held at the 76th Annual Session of the California Medical Association, April 30-May 3, Los Angeles.

†Professor of Medicine, Jefferson Medical College, Philadelphia.

eosinophilia and the sedimentation rate was not increased. If it were tuberculosis, the final state could have been interpreted as tuberculous meningitis or cerebral tuberculoma, but of which there was no diagnostic evidence. Fever is not mentioned after the early period in the description of the case, nor is the character of the sputum or the pleural effusion noted.

The history also suggests the possibility of viral pneumonia, followed, after too long an interval, however, by encephalitis. The pleural effusion, cavitation and eosinophilia do not favor this diagnosis.

Pulmonary abscess may have been considered because of the evidence of pneumonia followed by pleural effusion and cavitation. The cerebral symptoms could be explained by metastatic abscess in the brain. A "cold," on rare occasions, may give rise to lung abscess, but there is no evidence in the history of the aspiration of a foreign body or of surgical operation in the nose or throat. There is no description of the sputum or of the pleural fluid.

Carcinoma of the lung and metastasis to the brain is a possibility, but again, healing of the pulmonary lesion and other laboratory evidence does not favor the suggestion.

This leaves the most likely possibility to be discussed; namely, coccidioidomycosis with terminal coccidioidal invasion of the brain. The patient was a farmer who lived in an endemic area. The disease usually begins as a "cold" and in the great majority of cases never progresses beyond that brief period. In a few instances it causes more serious disease, as in the present one, probably abetted by the coexisting diabetes. Pneumonia indistinguishable from viral pneumonia occurs, but it is more often accompanied by pleural effusion and cavitation which, as described, may heal with little or no trace. In favor of this diagnosis are the patient's occupation, the clinical course, the normal sedimentation rate and a normal leukocyte count, with eosinophilia. No mention is made in the record of any specific tests for coccidioidomycosis.

It is well known that patients with coccidioidomycosis who do not have erythema nodosum during the initial stage are more likely later to develop the generalized form. In the present case, no skin lesions were noted, the pulmonary lesion healed, but one month later cerebral symptoms appeared which ended in death in another month. This suggests that infection persisted in the lung despite the negative roentgen ray evidence, and by way of blood stream the fungus eventually reached some area in the brain, probably the basilar region, lodged there and grew. Dissemination in some patients may include many organs and the brain is involved in 25 per cent of these instances. Furthermore, and as in the case at hand, localization may take place in the brain alone. A small percentage of persons who have had coccidioidomycosis even in its mildest form, especially those in whom no skin lesion occurred at the time, are liable to develop the disseminated form as long as ten years afterward.

The clinical diagnosis of the case is pulmonary coccidioidomycosis followed by coccidioidal basilar meningitis.

PATHOLOGIST'S DISCUSSION

DR. WILLIAM O. RUSSELL‡: When I heard that Dr. Reimann was discussing this case, I was reasonably sure that he would make the correct clinical diagnosis, knowing of his interest and experience with communicable diseases. There was one thing that was not given in the clinical history that would have further assisted Dr. Reimann in making the diagnosis of coccidioidomycosis. This was the fact that the patient lived in the Lompoc area in Santa Barbara County near Camp Cook. It was from Camp Cook that the first cases of coccidioidomycosis were reported in military installations in California during the war[1] and this area is now known to be endemic for this disease.

The postmortem examination of this man disclosed dense fibrous pleural adhesions over the surfaces of the lungs and sections of the lungs revealed small discrete white foci less than 1 mm. in diameter scattered in all of the lobes. A small cavity approximately 2 cm. in diameter was present in the upper lobe of the right lung. This cavity was surrounded by a small zone of moderately firm tissue and lined by a gray white caseous appearing surface.

In the mediastinum there were several enlarged lymph nodes having central caseous foci. Small gray white nodules similar to those seen in the lungs were noted in the liver, spleen and kidneys.

The weight of the brain was remarkably increased, being 1530 grams. The subarachnoid space over the base of the brain and particularly in the region of the optic chiasm was filled with a greenish yellow exudate. This exudate extended laterally into the sylvian fissures. Examination of the leptomeninges over the cerebral hemispheres disclosed small discrete yellow foci, most frequently seen in juxtaposition to the blood vessels in the sulci. Step sections through the brain disclosed moderate dilatation of the lateral, third and fourth ventricles. Small discrete slightly elevated nodules less than 1 mm. in diameter, imparting a fine granularity to the surface, were noted on the ventricular surfaces. In the vermis of the cerebellum, extending slightly into the right lobe, a focus of indurated tissue was noted that on section showed a large central area of caseous necrosis. The indurated tissue measured 13 mm. in diameter and involved the folia and the subarachnoid space.

I should like to admit at this time that, after reviewing these gross pathologic changes without the benefit of the microscopic examination, it was my opinion this was a typical case of tuberculosis with a cavity in the lung, with miliary dissemination to the lungs, liver, kidneys and spleen, and a tuberculoma in the cerebellum with leptomeningitis. However, I would like to add, apologetically, that at that time the clinical history was not available and I did not know of

‡Santa Barbara General Hospital, Santa Barbara, California.

the 10 per cent eosinophilia and that the patient lived in the Lompoc area.

Microscopic examination of the cavity in the upper lobe of the right lung, one of the enlarged lymph nodes in the mediastinum, the lesion in the cerebellum, the leptomeninges and the small gray foci in the parenchymatous organs disclosed in all instances granulomatous lesions containing spherules with double contoured capsules and frequently containing endospores characteristic of coccidioides immitis. Caseation was present but was remarkably different from what is usually seen with tuberculosis, there being a more acute type of inflammation with infiltrating polymorphonuclear leukocytes. A remarkable tendency was noted for the giant cells seen to have phagocytized the large spherules. The section taken from the cerebellum revealed the granuloma extending up to and involving the leptomeninges. This is a particularly significant fact in regard to the genesis of the leptomeningitis, since the question is posed whether the lesion in the cerebellum caused the meningitis or whether the subarachnoid space was infected from the blood. Certainly, in this case the leptomeninges could have been infected by organisms from the granuloma. It is interesting to note that, in the recently published studies of Forbus and Bestebreurtje,[2] the brain substance in coccidioidomycosis is not nearly so frequently involved as with tuberculosis. These authors concluded, therefore, that infection of the leptomeninges in coccidioidomycosis does not often result from the extension of a focus of the disease in the brain to the subarachnoid space. It was further pointed out that, because the organisms were of appropriate size to lodge within the vessels of the subarachnoid space, it was most likely that infection of the leptomeninges was by this means.

Anatomic Diagnoses: These were fibrocaseous coccidioidomycosis with cavitation in the upper lobe in the right lung; fibrocaseous coccidioidomycosis of the mediastinal lymph nodes; fibrous obliteration of the pleural cavities; miliary coccidioidomycosis of the lungs, liver, spleen and kidneys; coccidioidomycoma of the cerebellum; coccidioidomycotic leptomeningitis; granular coccidioidomycotic ependymitis; and internal hydrocephalus.

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1. Shelton, R. M.: Survey of coccidioidomycosis at Camp Roberts, California, J.A.M.A., 118:1186-1190 (April 4), 1942.

2. Forbus, W. D., and Bestebreurtje, A. M.: Coccidioidomycosis: a study of 95 cases of the disseminated type with special reference to the pathogenesis of the disease. The Military Surgeon, 99:653-719, 1946.

CLINICAL CONFERENCE

Psychosomatic Aspects of Migraine

FROM THE MEDICAL STAFF CONFERENCE, UNIVERSITY OF CALIFORNIA HOSPITAL, SAN FRANCISCO, MARCH 26, 1947

DR. PAUL A. GLIEBE *: This morning we plan to discuss the psychosomatic aspects of allergic disorders. Since we have available for presentation a man who has suffered from migraine, we will restrict our discussion to this problem and to the general subject of headaches. It is common knowledge, of course, that distressing emotional situations not infrequently "give one a pain in the neck, or are enough to give one a headache;" yet because this is a truism we overlook or under-rate the importance of the emotional elements in any physical complaint. The patient to be presented has been investigated thoroughly from every physical viewpoint; the sole conclusion was a diagnosis of migraine.

CASE PRESENTATION BY DR. ALFRED AUERBACK†: Mr. S. is a 40 year old lawyer. He was troubled by typical migraine headaches for nearly 23 years. Will you describe your headaches, Mr. S.?

MR. S.: They always began with distortion of vision, similar to the turning of a windmill wheel, occurring at the side of the eyes. This developed to the point where my vision was practically nil. This was followed by very severe headache with pain extending into the neck and shoulder. The headaches were accompanied by nausea and vomiting. I could not stand light. I went to bed in a darkened room for eight to twenty-four hours. It took another day to come back to normal.

DR. AUERBACK: How long and how frequently did you have headaches?

MR. S.: From once a week to twice a year for 22 to 23 years..

DR. AUERBACK: How long is it since you have seen me?

MR. S.: October 1944.

DR. AUERBACK: How many migraine headaches have you had since then?

MR. S.: None.

DR. AUERBACK: How do you account for it? Would you tell the doctors very briefly why you had migraine headaches?

MR. S.: I was a breech birth baby, causing an injury to my mother. When I was around ten or twelve years old, she had an operation to correct this injury. Someone in the family—I don't remember who—informed me why she was having the operation. That made quite an impression on me to think that I had been responsible for her having this operation. That operation, in turn, resulted in a hernia. She had two subsequent operations to correct the hernia, neither of which were successful. And all her life she has been suffering from that. In my interviews with you, I discovered that I was suffering from feelings of guilt, blaming myself for her ill health.

DR. AUERBACK: Did any one else in your family have migraine?

MR. S.: My mother did. I don't know about any other member of my family.

DR. AUERBACK: What Mr. S. has told you about his feelings of guilt and responsibility for his mother's illness constitute a very important factor in the production of his migraine attacks. However, the background underlying the production of migraine headaches is more complicated: he did not mention the tremendous hostility he has had toward his mother all through life. His mother was the dominant person in the household, managing the father, and profoundly influencing the lives of her children. She was opposed to her son's going with girls or getting married. She did everything in her power to prevent the patient going with girls during the time he was in high school. This was the cause of repeated arguments between the patient and his mother, arguments the mother invariably won.

Another source of conflict was the fact that the patient wanted to go to college, and the mother continuously opposed this for financial reasons. The patient developed terrific resentment toward his mother, but owing to her continuous ill health, for which he felt largely responsible, he did not voice his difference of opinion very frequently, and when he did he had a profound feeling of guilt.

Mr. S. always thought he was his mother's favorite, and recalled at a very early age identifying with her. Identification with his mother was reinforced by the fact that all his life he had felt physically inferior to his father and brothers. From early infancy the patient had found that any illness brought him considerable attention from his mother and family, and made him a very important person in the household: "All my life I had the idea that I should have something wrong with me. My headaches came on during my adolescence when my mother was having her recurrent operations for the birth injury which I felt was my fault. In addition, I was having considerable conflict with her over the fact that I wished to go with girls, and she strongly opposed it; also, that I was very desirous of going to college and she opposed

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this too. Whenever I stood up to her or criticized her, I felt very guilty. It was in this setting of mixed emotions, of resentment and guilt, that seemingly I extended my identification with my mother to acquiring a migraine headache similar to those she suffered."

Wolff states that 90 per cent of headaches arise from emotional tension. Friedman, Brenner and Merritt have concluded also that the majority of patients with chronic headaches have these arising from emotional stress and inner conflicts. It is their feeling that psychotherapy is every bit as important as drug therapy, and that simple psychotherapy, such as is within the province of the general practitioner, often is very effective therapeutically. It is surprising, considering how frequent headaches are, how little has been written on this condition. Recent reports describe migrainous patients as sensitive, reserved, repressed individuals who have considerable anger that they hold tightly in check. Unable to give vent to their feelings, they symbolically "blow their tops." Our patient reported that on one occasion when he was suffering a very severe migrainous headache, he asked a nurse for an injection of Gynergen which was refused him. He became so enraged at the nurse he "bawled her out," and was amazed to find that his headache practically disappeared.

Psychotherapy employed in this case is similar to that used in all cases that come to a psychiatrist's attention. The life history is reviewed, finding out specific incidents in childhood and later life which could give rise to patterns of instability, followed by a detailed discussion of immature and mature methods of reacting to these situations. It is pointed out to the patient that rather than reacting emotionally to frustrations, he must realistically face the situation: that is to weigh the possible solutions and decide which is best for the particular situation. By learning to think and consciously changing his pattern of reaction, he can develop a more healthful pattern for coping with the problems that arise in life. In developing an attitude of seeing things objectively and realistically, feelings of hostility, guilt and inferiority soon disappear. In psychiatric practice we have found that if patients are able to verbalize their hostilities, their headaches are immeasurably improved. In the case of Mr. S., our discussions served to relieve him of his feeling of guilt for his mother's chronic illness. He was able to admit to himself the resentment he had towards his mother, and by talking it out in my office, has been able to effect a better relationship with his mother than at any time before in his life. He can now visit his mother without developing any symtoms whatever, and is no longer disturbed by any of her domineering attitudes toward him.

Dr. Charles Aring[‡]: I don't suppose there is any one here who knows any more about the mechanisms of the central nervous system than I do. I know where the cells lie, where the tracts run, about conduction, about the axone reflex and triple response. I know approximately what any other expert on neurology knows about mechanism. Yet, this is of no use whatsoever in the therapy of such a patient as we have just seen. One could handle this case just as well if he knew nothing about mechanism. This case illustrates how the physician and patient may be in conflict. The doctor wants to know about mechanism, what the physiochemical distortions are. The patient wants relief. He is not in pursuit of the ideal of health in any direct sense.

A psychosomatic affection has been defined as a bodily disorder, the nature of which can be appreciated only when emotional disturbances are investigated in addition to physical disturbances. One must know what kind of person the patient was before he became ill. Why did he get sick when he did? Why did he get sick in the manner that he did? These questions may be answered in many cases if you will allow the patient to talk without too much interruption.

The question of heredity in migraine merits consideration. I do not imply that it is genetically inherited. I find no difficulty believing that parents may subtly transfer to the child their methods of living or, in other words, their social techniques. One frequently hears of migraine in a long line of forebears. It is imperative to break this chain lest the Biblical admonition come true, "The sins of the father shall be visited upon the third and fourth generations."

[‡] Professor of Neurology, University of California Medical School, San Francisco. (Since resigned.)

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NOTICES AND REPORTS

The A.M.A. Centennial

Report of the Chairman of the C.M.A. Delegation

JOHN W. CLINE, M.D., *San Francisco*

The Centennial of the American Medical Association held in Atlantic City in June was notable for the large attendance, the number of foreign guests and the quality and diversity of the scientific programs. Practically every country was represented and the attendance was said to total over 15,000.

The House of Delegates was in practically continuous session throughout the four days and its deliberations covered a wide range of subjects. The major portion of the time was devoted to the problems of the general practitioner, certain of the economic phases of medicine and the public relations program of the A.M.A.

Concern was expressed over the current tendency of young doctors to seek specialist training and recognition and to shun general practice. Efforts were made to induce hospitals to be less restrictive in granting staff memberships and the Council on Medical Education and Hospitals was instructed to revise the rules for approval of hospitals for resident training so that requirements of experience and proficiency would replace board certification and membership in special societies for staff membership.

At the December, 1945, meeting, interim sessions of the House of Delegates were established. It was decided at this meeting to hold these meetings in different parts of the country each year and to hold two-day scientific meetings devoted to the needs of the general practitioner in conjunction with them.

A committee was established to survey current medical education, to ascertain methods of utilization of hospitals to train general practitioners, and to investigate the adequacy of numbers and distribution of physicians. This action was designed to ascertain facts in an effort to improve the situation of general practice.

The stand of the American Medical Association in opposition to socialization of medicine was reiterated and voluntary plans were encouraged. The Association of Medical Care Plans is to be given greater assistance. The Bureau of Medical Economics is to be expanded.

There were many other items of medico-economic importance considered, including study and formulation of a code covering group practice, the nursing shortage, fees paid by government agencies, and pay for physicians in service.

The public relations program of the A.M.A. started in San Francisco last year came to a standstill at this meeting due to an impasse reached by the Board of Trustees and the Public Relations Advisor and the Executive Assistant in charge of Public Relations. There were a number of factors in the development of this situation which culminated in the resignation of the Advisor and the Executive Assistant. This temporarily leaves the A.M.A. without professional public relations aid. The House of Delegates decided that the office of Executive Assistant is to be filled as promptly as possible, and in the interim public relations will be under the direction of the Executive Committee of the Board of Trustees. The Board has expressed a determination to see that the public relations of the A.M.A. are adequately handled but has not yet had time to make the necessary appointment.

The California resolution regarding public relations was passed with little change. The California delegation was well represented on reference committees and was active in the deliberations of the House.

Dr. Dwight Murray of Napa was reelected to the Board of Trustees by an overwhelming majority.

C.P.S. Enrolls Employees Of Standard Oil

California Physicians' Service has recently completed the enrollment of the employees of Standard Oil Company of California and its designated subsidiaries. Over 6,800 employees of the Standard Oil Company joined C.P.S. during the drive, and the final tally showed that (including family dependents) over 15,000 new members were enrolled in this one statewide campaign.

This latest large-scale enrollment effort is noteworthy for two reasons:

1. Since Standard Oil Co. is one of the State's key industrial groups, its acceptance of the C.P.S. program marks a high point in the development of prepaid voluntary medical service.

2. The enrollment effort was carried out in direct competition with one of the country's leading insurance companies, offering fine indemnity type contract. Enrollment proceedings were carried out in such a way as to allow a direct comparison in public desire in the health insurance field. Medical service at a slightly higher cost, or indemnity at a lower cost?

The results were astonishing. Medical service won with a preference shown of better than two to one. Over 6,800 applications for C.P.S. service were received, while only 3,300 applications were turned in requesting the insurance indemnity plan.

The circumstances surrounding the enrollment of this group are probably the most unusual that C.P.S. has encountered to date. Standard Oil Co. felt that its employees should have the opportunity to study both types of coverage and then voluntarily choose the plan which they felt would be of the most service to them. A special packet, containing specially prepared and censored sales literature, explaining both Programs, was distributed under Standard Oil sponsorship, to all employees throughout the entire State. At the same time, notification was given of special meetings to be held on company property and on company time, with the request that all employees attend. Representatives of both the insurance company and C.P.S. were given equal time to explain their respective programs. A specially appointed Standard Oil Co. official was on hand at every meeting to act as moderator and to explain the company's reasons for the proceedings. The last half of each meeting was devoted to a question and answer period and the employees in attendance were urged to direct questions to either or both of the representatives. All sales presentations were limited to factual material, with no direct comparisons allowed.

The basic issues were simple and to the point: Does indemnity answer your personal needs? Does medical service answer your requirements more to your satisfaction?

The final results were so positive that very little doubt can remain in the minds of the proponents of either method.

Several very interesting facts were turned up during the campaign. The newly formed C.P.S. Industrial Relations Department was called into action and the results bear special mention. The C.I.O. Oil Workers Union in Richmond, endorsed the C.P.S. program and the enrollment results in that area were highly successful.

Family participation in this Standard Oil Group was unusually high with an average of 2.5 per cent participation per application, as against a statewide average in all other groups of 1.95 per cent.

The total percentage of enrollment, including both contracts, was 61.2 per cent. Future reopenings of the group will, without a doubt, increase the percentage of participation materially.

The successful enrollment of organizations of the caliber of Standard Oil of California are continually increasing the prestige of prepaid medical service as the best answer to the public demand for protection from the economic shock of medical, surgical and hospital care.

Requests for Cancer Manual

Close to half the members of the California Medical Association have asked that they be sent the bound volume of articles in the California Cancer Commission Studies which is to be made up some two years hence, after each of the chapters in the studies has appeared in CALIFORNIA MEDICINE. Intended to aid the practicing physician in the diagnosis and management of early cancer, the manual is to be supplied free of charge to California Medical Association members requesting it.

To determine the number of bound volumes needed, the Cancer Commission early in July sent returnable postcards to all members, asking that they indicate whether they wished to receive the manual. By mid-August some 4,200 of the cards had been returned. Few of the physicians who returned cards said that they did not wish to receive the manual. Some of the cards did not indicate whether the sender did or did not want the bound volume, but in such cases the Cancer Commission will send the manual. Several of those who returned cards asking for the volume neglected to sign their names, so that it is not known where to send the book when it is completed.

Refresher Course on Cancer

The California Cancer Commission announces the second Refresher Course on Cancer for physicians to be held in Los Angeles County General Hospital on Sunday and Monday, October 5 and 6. This course, like the one in January, will be under the supervision of the Tumor Board of the Los Angeles County General Hospital and the expenses of the course will be underwritten by the California Division of the American Cancer Society.

The program has been prepared by a sub-committee of the Cancer Commission consisting of Dr. George Sharp and Dr. Clarence Berne. Instructors

have been selected from the faculties of the University of Southern California School of Medicine and the College of Medical Evangelists, and from the Los Angeles County Medical Society.

Through the support of the California Division this two-day course is offered without charge to practicing physicians in southern California. Because of limited facilities, reservations should be made immediately with Dr. E. M. Butt, 1200 North State Street, Los Angeles 33.

October 5, 1947

AFTERNOON

ERIC LARSON, M.D., *Chairman*

1:00-1:15—Welcome by Cancer Commission Lyell C. Kinney, M.D.
Welcome by Los Angeles County Hospital Tumor Board H. P. Jacobson, M.D.
1:15-2:00—General Tumor Pathology A. G. Foord, M.D.
2:10-2:40—Historical Development of the Cancer Problem Ian Macdonald, M.D.
2:40-3:10—Management of Melanoma John W. Budd, M.D.
3:20-4:00—Skin Cancer Treated by General Surgery C. H. McIntyre, M.D., Leo Kaplan, M.D.
4:00-4:30—The Legal Responsibility of the Physician to Neoplastic Disease Louis J. Regan, M.D.

EVENING

WM. E. COSTOLOW, M.D., *Chairman*

8:00-8:30—Experimental Cancer Research H. E. Pearson, M.D.
8:30-9:00—Biochemistry of Growth H. J. Duel, M.D.
9:10-9:30—Malignant Tumors of Bone Frances M. McKeever, M.D.
9:30-10:00—Management of Uterine Bleeding Erle Henricksen, M.D.

October 6, 1947

AFTERNOON

H. P. JACOBSON, M.D., *Chairman*

1:00 2:00—Tumor Board Meeting. Presentation of Cases.
2:10-2:40—Diagnosis of Pulmonary Neoplasms Reginald Smart, M.D.
2:40-3:10—Tumors of the Oral Cavity George S. Sharp, M.D.
3:20—Differential Diagnosis of Tumors of the Neck C. J. Baumgartner, M.D.
3:50-4:30—Psychology of Management of Cancer Patient Chas. A. Sturdevant, M.D.

EVENING

LEROY B. SHERRY, M.D., *Chairman*

8:00-8:30—Roentgenologic Diagnosis of Gastro-Intestinal Tumors Kenneth S. Davis, M.D.
8:30-9:00—Benign Tumors of Bone Paul S. McMaster, M.D.
9:10—Biopsy and Pathology of Cancer of Breast Louisa B. Keasby, M.D.
9:40—Diagnosis and Treatment of Cancer of Breast C. J. Berne, M.D.

In Memoriam

BETTS, IRVIN H. Died in San Francisco, July 1, 1947, age 58, following a year's illness with heart disease. Graduate of the University of California Medical School, Berkeley-San Francisco, 1915. Licensed in California in 1915. Dr. Betts was a retired member of the Tulare County Medical Society, the California Medical Association, and an Affiliate Fellow of the American Medical Association.

HUFF, EDMUND NEWELL. Died in South Pasadena, July 3, 1947, age 69, of aortic aneurysm (arteriosclerotic) chronic hypertension. Graduate of the Hahnemann Medical College and Hospital of Philadelphia, Pennsylvania, 1900. Licensed in California in 1939. Dr. Huff was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

MCKENNA, STEPHEN EUGENE. Died in Los Angeles, June 16, 1947, aged 37, of bulbar poliomyelitis. Graduate of the University of California Medical School, Berkeley-San Francisco, 1937. Licensed in California in 1937. Dr. McKenna was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

MACNAMARA, GEORGE A. Died in National City, July 3, 1947, age 51, of heart disease. Graduate of New York University College of Medicine, New York, 1931. Licensed in California in 1942. Dr. MacNamara was a member of the San Diego County Medical Society, the California Medical Association and a Fellow of the American Medical Association.

MURPHY, JAMES EDWARD. Died in Sacramento, May 17, 1947, age 54, of myocardial infarction. Graduate of St. Louis University School of Medicine, Missouri, 1923. Licensed in California in 1924. Dr. Murphy was a member of the Sacramento Society for Medical Improvement, the California Medical Association, and a Fellow of the American Medical Association.

NEWS and NOTES

NATIONAL • STATE • COUNTY

LOS ANGELES

The **Medical Veterans Association** of Los Angeles held its first annual stag banquet at the Los Angeles Breakfast Club, July 24. Approximately 400 physicians attended and a number of dentists were also present. Many acquaintances were renewed and there was a great deal of reminiscing about experiences while in the service. One of the features of the evening was a brief address by E. T. Remmen, M.D., president of the Los Angeles County Medical Association. Many new members were enrolled and an invitation to join the Association was extended to all medical, dental and nursing officers, veterans of World War II, who served with either the United States or Allied Forces. Other social events are being planned for the future and an invitation will be extended to all those eligible to membership to attend.

Dr. Sherman Miller, who has been practicing medicine from his home for several months since his discharge from the Army, has announced the opening of an office in Culver City.

SAN BERNARDINO

Dr. F. E. Wiggins has replaced Dr. Frank M. Gardner as the health officer of the city of San Bernardino.

SAN DIEGO

Dr. J. B. Askew, Chief of the Bureau of Hospital Inspections since it first began operation in January of 1946, has resigned from the staff of the State Health Department to become the assistant health officer of San Diego County. Dr. Askew will serve under **Dr. Alex Lassen**, San Diego County Health Officer.

Dr. Sam J. McClendon, San Diego, a member of the State Board of Public Health and past president of the California Medical Association, was elected president of the California Heart Association at its annual meeting in Los Angeles recently.

SAN FRANCISCO

Asked by the United Nations to help set up the National Neuropsychiatric Institute of Nanking under the auspices of the World Health Organization, **Dr. Karl Bowman**, medical superintendent of the Langley Porter Clinic in San Francisco, has flown to China where he is scheduled to spend three months on the project. It is planned to make the Nanking Institute a training center and focus of teaching and research in psychiatry for all China.

SAN JOAQUIN

Recently discharged from the army, **Dr. Arnold A. Michals** has joined his father, Dr. N. J. Michals, in the practice of medicine in Lodi. The younger Dr. Michals will specialize in surgery.

SAN LUIS OBISPO

Dr. Philip A. Bearg has resigned as health officer of San Luis Obispo County. As yet no one has been appointed to fill the vacancy.

SAN MATEO

Appointment of **Dr. J. C. Shrader** and **Dr. Francis E. Howard** to the staff of the Redwood City Clinic has been announced by the clinic. Dr. Shrader, an internist, recently received his discharge from the Army after four years' service. Dr. Howard has been chief resident surgeon at Community Hospital in San Mateo, a post he had occupied for 15 months following discharge from the Navy.

Announcement has been made of an association of six physicians, five of them veterans of World War II, to form the **Menlo Medical Center** in Menlo Park. They are Dr. Ernest H. Sultan, general practitioner; Dr. Frederic P. Schidler, surgeon; Dr. Charles D. Armstrong, internist; Dr. Gordon E. Williams, pediatrician; Dr. Peter S. Talbot, obstetrician and gynecologist; and Dr. Stanford B. Rossiter, radiologist. Plans are to construct a building to house the center in Menlo Park. It is expected to be ready for occupancy by March of next year.

STANISLAUS

Dr. H. L. Archibald, upon completion of his terminal leave from the Army, has become associated with Dr. E. G. Allen with offices in Patterson.

GENERAL

Dr. G. H. A. Clowes, Ph.D., Sc.D., LL.D., director emeritus of the Lilly Research Laboratories, was honored by the American Diabetes Association at its recent annual meeting in Atlantic City, New Jersey. He delivered the annual Banting Memorial address and was awarded the Banting Medal which is given in recognition of distinguished service in the field of diabetes. Under Dr. Clowes' direction, the Lilly Research Laboratories cooperated with the University of Toronto and Drs. Banting and Best in the early development of insulin of sufficient purity and stability to permit its widespread clinical use throughout the world.

An organization of nearly 100 doctors which several months ago was formed as a labor union called the Association of Santa Fe Coast Line Physicians, is negotiating with the Santa Fe Hospital board of trustees on wages, rules and working conditions, according to a report by International News Service.

Demand that the Department of Justice take steps to stop six government agencies from spending government money for "propaganda promoting socialized medicine" is being pressed by Representative Harness (R., Indiana). Representative Harness, who is chairman of a House investigating committee, has asked an investigation of the U. S. Public Health Service, the Office of Education, the Children's Bureau, the U. S. Employment Service, the Department of Agriculture and the Bureau of Research and Statistics. The committee he heads has charged in its findings that all the six agencies named were "known to have participated in the socialized medicine campaign." The report said that key personnel in the agencies had set up health workshops in strategic areas "to build up an artificial, federally stimulated public demand upon Congress for enactment of the Wagner-Murray-Dingell bill providing compulsory health insurance."

Organization of an affiliated "eye bank" in New Orleans has been announced by the Eye-Bank for Sight Restoration, Inc. The new eye bank, the third affiliate to be formed, will operate in cooperation with the Louisiana State University Medical School and the Tulane University Medical School and Hospital. Other affiliated eye banks are functioning in Boston and Chicago.

The American College of Physicians will conduct its 29th Annual Session at San Francisco, April 19-23, 1948. General headquarters will be at the Civic Auditorium. **Dr. William J. Kerr** and **Dr. Ernest H. Falconer**, both of San Francisco, are the co-chairmen for local arrangements and the program of clinics and panel discussions. The president of the college, **Dr. Hugh J. Morgan**, Professor of Medicine at Vanderbilt University School of Medicine, Nashville, Tennessee, is in charge of the program of morning lectures and afternoon general sessions.

The Office of Military Government for Germany (U. S.) has a position vacancy in its Public Health and Welfare Division for a qualified physician to serve as Public Health Officer at Bremmerhaven, Germany, at a salary of $8,877.75 a year. Full details and a description of the duties may be had from Major D. Donald Klous, War Department Special Staff, Civil Affairs Division, Personnel and Training Branch, Washington 25, D. C.

More than 1,000 medical specialists in x-ray and radium are expected to attend the 48th annual meeting of the American Roentgen Ray Society which will be held at Haddon Hall in Atlantic City, September 16-19, according to an announcement by the society.

Recommendation for "the establishment of departments of Anesthesiology in all medical schools and hospitals under the direction of a doctor of medicine actively engaged in the practice of Anesthesiology," was made in a resolution by the American Society of Anesthesiology in a resolution adopted by its Board of Directors at a meeting in Atlantic City, June 11. The resolution recommended that "the department of Anesthesiology shall bear the same relationship to the medical school and/or hospital as is borne by other medical departments of the institution."

In the same resolution the society went on record as disapproving of "the training of persons other than doctors of medicine in the science and art of anesthesia, for the assumption of responsibility in the care of patients where it may be necessary to exercise medical judgment, and particularly does it disapprove of the issuance of certificates for such training by its members."

It further disapproved "the existence of departments of Anesthesiology in hospitals and/or medical schools under the direction of persons other than doctors of medicine or under the nominal direction of doctors of medicine not actively engaged in the practice of Anesthesiology."

Acting for the **American Cancer Society**, the Committee on Growth of National Research Council announces that it is ready to receive **applications for fellowships and grants** in cancer research for 1948. October 1 is the deadline for receipt of applications to extend existing grants and November 1 for new grants. Requests for fellowships and senior fellowships in cancer research may be submitted as late as December 1. Communications should be addressed to Executive Secretary, Committee on Growth, National Research Council, 2101 Constitution Avenue, Washington 25, D. C. Final decisions on applications will be made in February. Ordinarily, the grants and fellowships become effective in July.

"During the past two years," says the announcement, "the American Cancer Society, acting upon the recommendation of the Committee on Growth, has awarded 176 grants and 47 fellowships representing a total expenditure of some $2,700,000. The Committee will continue to recommend support of biological and clinical research dealing broadly with phenomena relating to growth, typical or neoplastic. In the formulation of this program the committee will be guided, as in the past, by the advice of some 120 scientists grouped in 20 panels comprising its sections on biology, chemistry, physics, chemotherapy, clinical investigations and fellowships."

INFORMATION

Public Relations and the Bureau of Medical Economics

Rollen Waterson *

Common sense points the way to good public relations for medicine. The primary requirement is that the individuals who comprise medicine—all physicians—earn good relations with the individuals who comprise the public—all patients.

Public relations is an art that must be practiced *by* doctors of medicine. Contrary to popular belief, it can not be practiced *for* medicine by employed experts—the spellbinder, the press agent, the propagandist.

Medicine's public relations—good or bad—is the end product of each contact between physician and patient. Public relations, therefore, becomes synonymous with *human* relations.

This basic public relations concept was the force leading to the establishment of the Bureau of Medical Economics by the physicians of Alameda County. The Bureau's purpose is to serve as a coordinating agency for doctors' efforts to remove barriers preventing complete economic understanding with their patients.

Misunderstandings—which add up to bad public relations—must often find expression in the patient's failure or refusal to pay for the doctor's services.

Judged by sordid statistics supplied by a study of the nation's commercial collection agencies, the known proportion of disgruntled patients to satisfied ones is in itself alarming. From one-fourth to one-third of the families in most cities in the nation have been hounded at one time or another by collectors for doctor bills.

There is no way of estimating the additional unknown number who escape this category by settling their medical accounts without coercion but with the vow that "I'll never go to *that* doctor again!" Together these groups form a bloc which is medicine's biggest obstacle to good public relations. The bloc was created by individual doctors; it can be removed only by individual doctors.

It is a fact that in most communities, bill collectors handle a greater dollar-volume of accounts for physicians *than for all other credit grantors combined.* Delinquent medical accounts form the only factor in the economic life of a community which can be and often is the sole support of a commercial collection agency. If this much economic difficulty with its customers became true of any commercial enterprise it would mean failure for that enterprise. If this continues to be true of medicine, it will mean the usurpation of the economics of medicine by those who proffer the promise of better business management—the government, the insurance companies, the hospitals.

Cure for these maladjustments and prevention of them is the province of the Bureau of Medical Economics.

The *cure* is being achieved by the individual arbitration of existing economic differences as represented by delinquent accounts. *Prevention* is being accomplished by applying, to the individual doctor's practice, sound medical business methods developed through Bureau research.

The Bureau supplants the commercial bill collector as medicine's chief ambassador of public relations. In its role as liaison between physician and patient, the physician-owned and -operated Bureau approaches each unpaid account problem from the standpoint of medical ethics and ideals: Will full payment of this bill work undue hardship on the payor?

Investigation has proved that persons who are delinquent in payment of doctor bills fall into three main categories: those on whom payment would work a genuine hardship: those who have failed to pay because of a genuine misunderstanding; and those who just have a genuine desire not to pay, period.

In the first group an adjustment is recommended to the doctor by the Bureau. (Actually less than one per cent need to be adjusted). In the second, the reason for the misunderstanding is determined and removed. In the third—then, and only then, are strong collection methods put into effect—*effectively.*

Paradoxically, this humane treatment produces greater return for the doctor at a lower rate of collection commission than was possible under the old system of commercial collector ruthlessness. At the same time there is a parallel achievement in that it is earning good public relations for medicine as a whole.

Bureau employees have made personal contact with more than one hundred thousand patients who have not paid their doctors. This broad experience provides a category for virtually every reason for patient dissatisfaction and delinquency. Through the other work of the Bureau, much has been learned of the manner in which one doctor builds satisfaction—and his practice—while another doctor unwittingly is destorying these very things.

This body of information is being carefully compiled and correlated. From it doctors are learning more and more how the business aspect of their offices must be conducted to achieve satisfaction in each physician-patient relationship. This results in a financially better practice for the doctor—and better public relations for medicine.

* Executive Secretary, Alameda County Medical Association.

An incidental sidelight on the program is offered by the Alameda County Medical Association, the Bureau having made it possible to advertise the fact that no one in the county need go without medical care because of inability to pay. The Association advertised for that individual who could not obtain medical care because he could not pay for it. No such person was found. But had medically-needy persons been found, medicine was organized, through the Bureau, to satisfy their needs.

Specific services provided by the Bureau of Medical Economics include:

For the doctor—
- Medical office management advice
- Collections
- Auditing
- Accounting
- Bookkeeping
- Statement preparation and mailing
- Investigation of patients' ability to pay
- Credit reporting
- Delinquency prevention
- Tax advice
- Malpractice prevention

For the patient—
- Ethical collection of delinquencies
- Adjustment of fees to ability to pay
- Fee complaint consideration (by medical association committee)
- Financing of medical costs
- Postpayment of medical costs
- Medical social service
- Information and advice on health insurance

Medicine cannot avoid being the target for attack from politicians, demagogues and crackpots so long as its public relations problems remain acute. The Bureau of Medical Economics alone will not solve these problems. Other important work must be and is being done by county and state medical societies. But until the objectives of the Bureau's program in human relations are reached, no amount of effort in other channels will achieve the desired over-all result.

There *must* be widespread improvement in the individual physician-patient economic relationship. This is being accomplished through the Bureau of Medical Economics, medical societies and physicians of the San Francisco Bay Area counties of Alameda, San Francisco, and Santa Clara, where offices of the Bureau are established and operating.

Distribution of Physicians in California in Relation to Population Shown by C.M.A. Survey

The California Medical Association is consulted frequently regarding possible openings for private practice in this state. In order to be able to inform inquirers as to the locations in greatest need of physicians, a study was made during the last several months of the geographic distribution of practicing physicians and of the feasibility of developing a map showing "Medical Service Areas."

The following table shows the general statewide picture:

Year	Population	C.M.A. Members	Other M.D.s*
1940	6,907,400	6,349	4,241
1947	9,420,000	8,605	4,480

* These include many retired physicians, some physicians in full-time educational and industrial positions and some not eligible for membership in the C.M.A.

The map (see Figure 1) shows the physician distribution by counties as of July, 1947. The unshaded areas (five counties) are those with one physician, M.D., per 1,000 persons or less; the dotted areas, those with one physician per 1,000 or 1,500 persons; the striped areas, those with one physician per 1,500 to 3,000 persons, and the cross hatched areas (only four counties) those with one physician per 3,000 persons or over.

There are no counties in California lacking a physician. There are some geographical areas in which physicians are few and it is to these areas that a majority of our inquirers are urged to direct their attention.

A protracted attempt was made to create a "medical service area map," that is, a map showing groups of counties or portions of counties which could be regarded as an area in which medical service was furnished from a given center. Because of the frequent overlap between different medical service areas, it was not possible to develop such a chart.

An "Advisory Committee on Hospital Facilities" has recently issued tentative proposals for medical service areas grouped around hospital facilities actually present or to be constructed. The committee divided the state into 16 hospital regions as follows:

PROPOSED HOSPITAL REGIONS IN CALIFORNIA

Region 1.—Regional Hospital: Redding; Community Hospitals or Service Centers: Yreka, Alturas, Dunsmuir, Tulelake, Cedarville, Adin, Bieber and Weaverville.

Region 2.—Regional Hospital: Eureka; Community Hospitals or Service Centers: Crescent City, Fortuna and Garberville.

Region 3.—Regional Hospital: Chico; Community Hospitals or Service Centers: Red Bluff, Westwood, Oroville, Willows, Gridley, Portola and Quincy.

Region 4.—Regional Hospital: Sacramento; Community Hospitals or Service Centers: Woodland, Placerville, Auburn.

Grass Valley, Marysville, Arbuckle, Roseville, Downieville, Truckee, Jackson and Colusa.

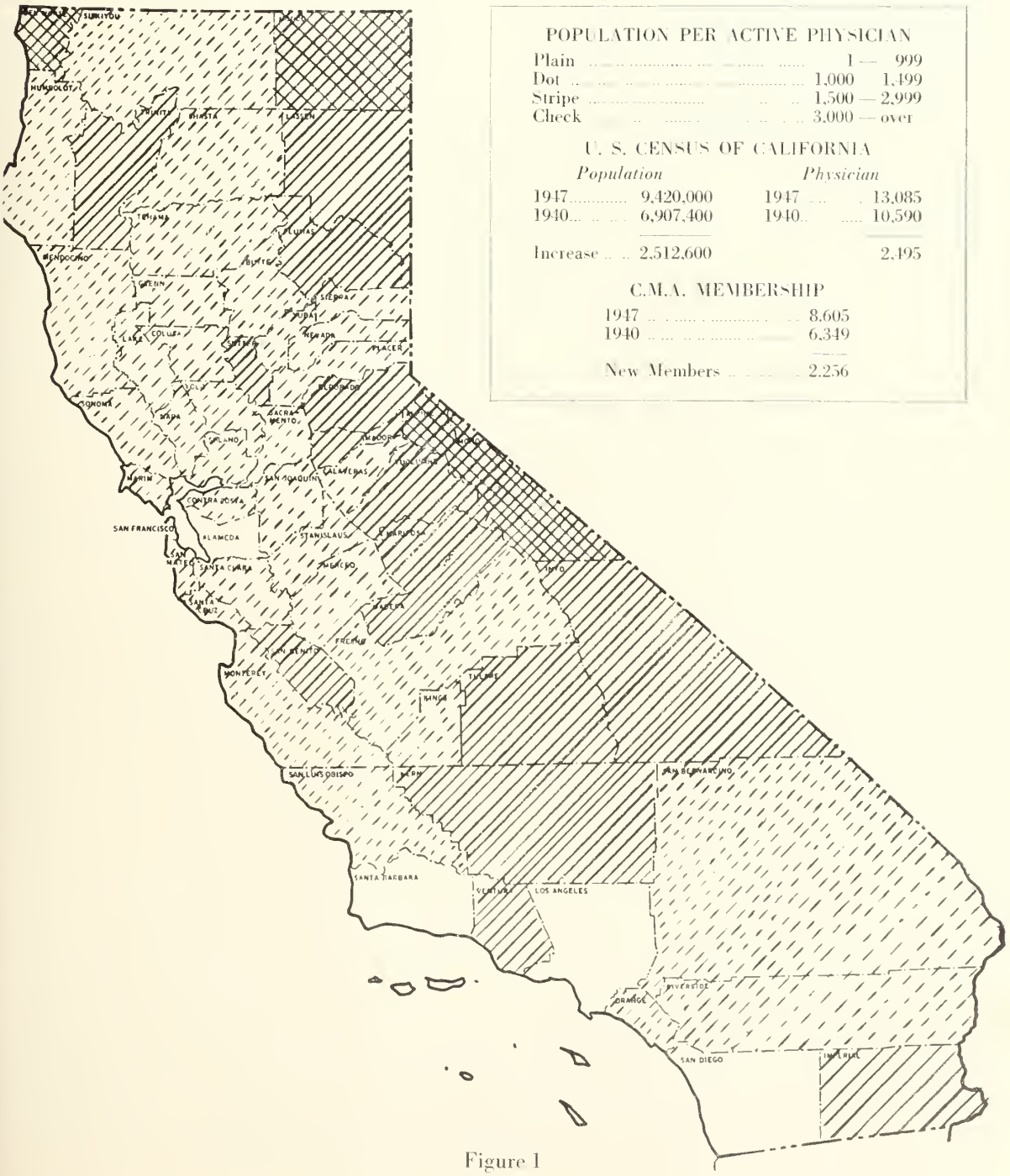
Region 5.—Regional Hospital: Santa Rosa; Community Hospitals or Service Centers: Fort Bragg, Lakeport, Napa, Ukiah, Willits, Healdsburg, Calistoga and Petaluma.

Region 6.—Regional Hospital: Oakland; Community Hospitals or Service Centers: Berkeley, Alameda, Vallejo, Pittsburg, Martinez, Richmond, Concord, Fairfield, Hayward, Livermore and Antioch.

Region 7.—Regional Hospital: Stockton; Community Hospitals or Service Centers: Lodi, Tracy, Modesto, Sonora, San Andreas, Patterson, Oakdale, Los Banos, Mariposa, Markleeville, Merced, Turlock and Yosemite.

Region 8.—Regional Hospital, and Teaching Center: San Francisco; Community Hospitals or Service Centers: San Rafael, South San Francisco, San Mateo and Redwood City.

Region 9.—Regional Hospital: San Jose; Community Hospitals or Service Centers: Palo Alto, Watsonville, Santa



POPULATION PER ACTIVE PHYSICIAN

Plain	1 — 999
Dot	1,000 — 1,499
Stripe	1,500 — 2,999
Check	3,000 — over

U. S. CENSUS OF CALIFORNIA

Population		*Physician*	
1947	9,420,000	1947	13,085
1940	6,907,400	1940	10,590
Increase	2,512,600		2,495

C.M.A. MEMBERSHIP

1947	8,605
1940	6,349
New Members	2,256

Figure 1

Cruz, Santa Clara, Los Gatos, Gilroy and Centerville.

Region 10.—Regional Hospital: Fresno; Community Hospitals or Service Centers: Madera, Selma, Hanford, Visalia, Tulare, Porterville, Coalinga, Reedley, Dinuba, Corcoran and Lindsay.

Region 11.—Regional Hospital: Salinas; Community Hospitals or Service Centers: Monterey, Hollister and King City.

Region 12.—Regional Hospital: Bakersfield; Community Hospitals or Service Centers: Taft, Wasco, Delano, Tehachapi, Mojave, Ridgecrest, Lone Pine, Bishop and Bridgeport.

Region 13.—Regional Hospital: Santa Barbara; Community Hospitals or Service Centers: Santa Maria, Paso Robles, Santa Paula, Ventura, Oxnard, San Luis Obispo and Lompoc.

Region 14.—Regional Hospital: San Bernardino; Community Hospitals or Service Centers: Redlands, Riverside, Corona, Blythe, Elsinore, Uplands, Indio, Banning, Palm Springs, Victorville, Barstow, Needles and Loma Linda.

Region 15.—Regional Hospital: San Diego; Community Hospitals or Service Centers: Escondido, National City, Brawley, Oceanside and Calexico.

Region 16.—Regional Hospital, and Teaching Center: Los Angeles; Community Hospitals or Service Centers: Santa Ana, Fullerton, Anaheim, Montebello, Culver City, Santa Monica, Beverly Hills, Burbank, Van Nuys, San Fernando, Palmdale, Glendale, Alhambra, Pasadena, Monrovia, Covina, Pomona, Whittier, Huntington Park, Compton, Long Beach, San Pedro, Torrance, Inglewood, Laguna Beach, Avalon and four within Los Angeles City and North County.

Your Association believes that the majority of areas in California are adequately supplied with physicians. The Committee on Rural Medical Service is working in cooperation with allied groups to improve the availability of medical service in the few rural areas still lacking such. The Committee on Hospitals is working with allied groups in an attempt to stimulate the development of additional hospital beds where they can be of most use to the sick.

Narcotics Warning

Calling attention to irregularities in the prescribing of narcotics by some California physicians and to what appears to be, in some instances, obvious negligence in complying with the provisions of Division 10, of the Health and Safety Code, (State Narcotic Act), F. Joseph O'Ferrall, Chief of the Division of Narcotic Enforcement of the California State Department of Justice has issued the following statement to the medical profession, as a warning:

"Henceforth all apparent irregularities will be investigated by the enforcement personnel of the Narcotic Division, under the Act. All triplicate copies of prescriptions issued by physicians throughout the State are forwarded to the Narcotic Division in accordance with Section 11166.11 of the Act. These copies are scrutinized and controlled by means of a key punch system and tabulations. Perusal of the tabulations discloses a definite uptrend in the quantity of narcotics prescribed as well as irregularities in the manner of prescribing and reveals the names of many persons receiving narcotics who have not been reported in accordance with the provisions of the law.

"The Narcotic Division believes, also, that some physicians are not making their own diagnoses in cases in which narcotics are prescribed, to determine whether or not such narcotics are indicated. It is incumbent upon every physician to dictate his own therapy and not accept the statement of the patient that narcotics are necessary.

"Instances have been noted in which there is an utter disregard of safeguards relating to the amount of narcotics prescribed for patients. Some physicians are on record as prescribing as much as 350 one-half grain Morphine tablets to a patient at one time. It is the contention of the Division that any patient ill enough to require that quantity of narcotics should have a physician in close attendance, who could prescribe for the condition as it exists at the time, and not issue a prescription for an excessive amount of narcotics. Of course, this does not apply in cases of malignancy which may be inoperable. In such cases the patient must be allowed such narcotics as the physician may deem necessary until the terminal status has been reached.

"The tabulations also reveal that there is considerable negligence on the part of physicians in reporting cases where narcotics have been prescribed, as required by Article 3, Section 11425 and 11426 of the State Narcotic Act. Report Cards are provided by the State Division on request, for the use of physicians in reporting cases where narcotics are required over a protracted period of time in the treatment of conditions wherein narcotics are indicated. Aside from being required by law, these reports are very important in checking on the activities of persons who do not have a pathological condition necessitating the use of narcotics but who impose upon ethical physicians in their efforts to procure narcotics to satisfy their addiction.

"Attention is especially called to the fact that ambulatory treatment of narcotic addicts is not permitted. A physician cannot treat a case of narcotic addiction in the patient's home. Such treatment must be given in a hospital or an institution approved by the Board of Medical Examiners, where the patient is at all times under restraint and control. (A list of approved institutions may be procured from the office of State Narcotic Division or the Board of Medical Examiners.) All treatment for narcotic addiction must be reported to the Division of Narcotic Enforcement and be in accordance with Article 2, Sections 11390 to 11395 inclusive, of the Act.

"The Division of Narcotic Enforcement has been cognizant for some time of the many flagrant irregularities involving the prescribing of narcotics. However, due to the limited personnel available, particularly pharmaceutical inspectors who could interview the medical profession with understanding, no drastic action has been taken except in a few very serious cases. A licensed physician and surgeon who violates the regulations regarding ambulatory treatment of addicts or otherwise violates the provisions of the State Narcotic Act is subject not only to criminal prosecution but may also have his license revoked by the Board of Medical Examiners.

"Although the Division of Narcotic Enforcement is primarily an enforcement unit it also acts as a service bureau, in that it stands ready at all times to counsel and advise the medical and pharmaceutical professions on any and all individual problems relating to narcotics. The Division of Narcotic Enforcement wishes to cooperate with the medical profession to the fullest extent but must also fulfill its obligation to the people of the State and enforce the provisions of the Narcotic Act. The ethical physician is, we know, desirous of complying with the law and will welcome any investigative program which may be instigated.

"Your attention is called, at this time, to page 7 of your 1946 Medical directory, under the caption '*Warning*,' which contains valuable information relative to the prescribing, administering and dispensing of narcotic drugs."

A copy of the State Narcotic Act will be furnished on request and any specific information desired may be obtained from the Division of Narcotic Enforcement, Department of Justice, 156 State Building, San Francisco 2, Telephone, Underhill 1-8700, Local 560, or 105 State Building, Los Angeles 12, Telephone, Madison 1271, Extension 755.

There are certain Federal Regulations with which the physician should also be familiar. Information concerning these may be obtained from Mr. R. W. Artis, District Supervisor, U. S. Bureau of Narcotics, 100 McAllister Street, San Francisco.

BOOK REVIEWS

COMMON CONTAGIOUS DISEASES. By Philip Moen Stimson, A.B., M.D., Assistant Professor of Clinical Pediatrics, Cornell University Medical College; Visiting Physician, Willard Parker Hospital; Director, Poliomyelitis Service, The Knickerbocker Hospital; Medical Director, The Floating Hospital of St. John's Guild. Fourth Edition, thoroughly revised. Published 1947. 503 pages with 67 illustrations and 8 plates, 6 in color. Flexible binding, $4.00. Lea & Febriger, Philadelphia.

This is a needed revision of a familiar work. It is written by a clinician of long experience in isolation hospitals. It does not pretend to be a reference work. It is a manual to be used on the spur of the moment by general practitioners, internists, pediatricians, public health officers and medical students. Nurses may be added to this list, so elementary does the author become at times.

The new chapter on antibiotics is a good summary of the indications and contra-indications for their use. The chapter of the general management of contagious diseases in the home and hospital is practically official for public health officers.

Active immunization procedures are not discussed as fully as most pediatricians require. On the other hand treatment is discussed in more detail than in many text books. The chapter on poliomyelitis is the best in the manual.

* * *

REHABILITATION THROUGH BETTER NUTRITION. By Tom D. Spies, M.D., From the Department of Internal Medicine, University of Cincinnati College of Medicine. 94 p., 50 Fig. Philadelphia and London: W. B. Saunders Company, 1947. Price $4.00.

Dr. Tom D. Spies is an indefatigable worker, a fluent talker and a facile writer who seems to love all three occupations. For 17 years he has devoted himself to the study of deficiency diseases, writing an increasing number of articles in medical journals. At present he is writing monographs, of which this is the second in a few months.

This monograph is concerned with the long-term application of the principles of nutritive therapy which make it possible for the malnourished to regain health and to perform work. It is largely a summary of his personal experiences, particularly of the studies at the Hillman Hospital in Birmingham, Alabama. It is worth-while reading for the physician interested in the problems of nutrition, even if the type of case encountered is generally different from that which one encounters in the Pacific Coast States.

The author arbitrarily excludes from consideration deficiencies of vitamin D and K and touches very lightly on microcytic anemia and non-tropical sprue for the reason that he has not seen much of these conditions. While this is commendable in that one can be sure of the author's personal knowledge about the subjects which he does discuss at length, it detracts from whatever value the book may have as a useful textbook on the diagnosis and therapy of the deficiency diseases as a whole. The signs and symptoms of those conditions which are taken up at length are well detailed. The long subclinical period found in all vitamin deficiencies is brought out well. The emphasis given to a 4,000 calory diet is misleading to physicians who work among a population not given to heavy manual labor—and, if followed, would certainly lead to a wide-spread obesity productive of as many difficulties as the prior malnutrition.

* * *

TUBERCULOSIS, AS IT COMES AND GOES. By Edward W. Hayes, M.D., F.A.C.P., Associate Professor of Tuberculosis, College of Medical Evangelists, Los Angeles, with Chapters by Laurence de Rycke, Ph.D. Second edition. May 1, 1947. Charles C. Thomas, Publisher, Springfield, Illinois. Price $3.75.

The second edition of this extremely useful little book on pulmonary tuberculosis written largely for the benefit of the patient is entirely revised and maintains the same high standard set in the first edition. Two excellent chapters entitled "Suggestions to Patients" and "Suggestions to Visitors" have been written by Dr. Laurence de Rycke. Ph. D. These are a distinct addition to the book. The diagrams illustrating collapse therapy are especially informative and render the book valuable in explaining to the patient measures later advocated by his own physician.

The page size has been enlarged and the type with it. The new edition is distinctly easier for a patient to read than the old one. The book may be highly recommended by physicians to their patients.

* * *

PERIPHERAL VASCULAR DISEASES. (Angiology). By Saul S. Samuels, A.M., M.D. Consulting Vascular Surgeon, Long Beach Hospital, Long Beach, New York; Attending Vascular Surgeon, Brooklyn Hospital for the Aged; Chief of the Department of Peripheral Arterial Diseases, Stuyvesant Polyclinic Hospital, New York; Fellow in Surgery, New York Academy of Medicine; Member of Committee on Surgery, New York Diabetes Association. Second Edition, 1947, pp. 85. Oxford Medical Outline Series. Oxford University Press, New York. Price $2.50.

In the preface to this second edition of his book, the author emphasizes the importance of assigning the entire responsibility for the care of patients with peripheral vascular disease to one individual "expertly trained in both medical and surgical phases of the subject, if progress in this field is to be made along present lines with a reduction in the number of cases requiring amputation and in the mortality rate."

This book is an outline for students and graduate physicians. The opening chapters briefly review the anatomy of the blood vessels and autonomic nervous system, classification of peripheral vascular diseases and symptomatology. Then follows the most significant section of the book devoted to a consideration of physical signs of arterial occlusion, diagnostic tests and the conservative treatment of obliterative arterial disease. The author has had a vast experience in this field. Emphasis is placed on simpler forms of prevention and treatment rather than on the use

of mechanical means of increasing the circulation to the extremities. The use of intravenous injections of 2 per cent sodium chloride solution 300 cc., three times a week, is strongly advocated. Intermittent venous occlusion, suction and pressure machines and sympathectomy are mentioned only to condemn their use. Complete rest in bed, abstinence from smoking, preservation of natural warmth, and scrupulous care to the extremity comprises the main treatment for occlusive vascular disorders. The author has rightly emphasized the importance of these conservative measures. Amputation of the leg, particularly in patients with Thromboangiitis Obliterans, is indicated only when there has been destruction of the weight-bearing portion of the foot.

The remainder of the book is devoted to considerations of various vascular disorders, vasospastic, congenital, and traumatic. The outlines are too short to be of value and there are some aspects which are not considered. For instance, in the discussion of venous thrombosis no mention is made of deep venous thrombosis of the calf, phlebothrombosis. Again, in the treatment of aneurysms, proximal ligation of the artery or extirpation of the sac is advocated. No mention is made of intrasaccular obliteration with preservation of the collateral vessels.

This book is valuable as an outline of peripheral vascular diseases chiefly in the diagnosis and conservative management of patients with obliterative arterial disorders.

* * *

ROENTGEN INTERPRETATION. By George W. Holmes, M.D., Board of Consultation, the Massachusetts General Hospital and Clinical Professor of Roentgenology Emeritus, Harvard Medical School, and Laurence L. Robbins, M.D., Radiologist-in-chief to the Massachusetts General Hospital and Associate in Radiology, Harvard Medical School. Seventh edition, thoroughly revised, published 1947. Octavo, 398 pages, with 266 illustrations. Fabrikoid, Lea & Febiger, Philadelphia. Price $7.00.

This familiar text reappears in slightly modernized dress and with a new co-author. In previous editions the cuts were reproduced from positive prints and were therefore the reverse of films as handled by the physician or resident. A gradual change is being made to negative illustrations and the new illustrations in this edtion are of such type. This results in a little confusion, but is undoubtedly a step in the right direction. In subsequent editions, it is hoped complete revision to negative prints will take place.

Much of the text is unchanged, and has been reviewed in previous issues of this journal. The manual can be recommended to all residents in hospitals, to many senior students, and to many practitioners. We believe it is of a special use for general practitioners in smaller communities who do some of their own roentgenography.

It is to be doubted if extensive bibliographies at the end of each section are essential for an elementary text of this type. The continued reproduction of Elsberg and Dyke's chart of alleged normal interpedicular distances is of questionable use, in view of published results obtained with this chart. On page 244 appears a sentence "The films of most adult lungs show a certain amount of thickening of the bronchial markings as a result of previous infection. . . ." We believe the time has come for reliable texts to be a little more precise in the use of the terminal "bronchial" markings. Undoubtedly the authors mean bronchovascular or vascular markings. It is well known that the bronchi contribute only a small amount to the shadows seen in the lungs proper under normal circumstances.

Diagnostic roentgenography now encompasses such a wide field that the authors must be congratulated on their continued ability to compress so much information into so small a space.

* * *

DISEASES OF THE NERVOUS SYSTEM. By F. M. R. Walshe, M.D., D.Sc. F.R.C.P. (Long.), F.R.S., D.Sc. (Hon.), Nat. Univ. Ireland. Fifth Edition. The Williams and Wilkins Company, Baltimore. Copyright 1947. Price $4.50.

A small, compact textbook of clinical neurology which presents the underlying anatomical and clinical syndromes in a clear and concise manner.

The volume is designed primarily to present to medical students a complex subject in a simplified form. It is an excellent book for the use of medical students or for those individuals who wish a source of ready reference.

Although the anatomical and clinical diagnostic portions of the volume are excellent, the portions dealing with special diagnostic procedures and treatment particularly those pertaining to the surgical aspects of certain neurological lesions are at times incomplete. The chapter dealing with sciatic and brachial neuritis makes no mention of pantopaque as used for spinal myelography, and in the portion treating brachial neuralgia the possibility of a protrusion of the intervertebral disc in the cervical region as an etiological factor is not mentioned. The chapter on arterial aneurysms of the circle of Willis with subarachnoid hemorrhage leaves one with the impression that this lesion is followed by a complete recovery in a high percentage of cases which is contrary to the present accepted opinion. In the chapter dealing with hypertension there is very little emphasis placed on proper examination and evaluation of the funduscopic findings, which should be presented even though this is a book primarily dealing with neurology. Here again from the standpoint of treatment the possibility of sympathectomy as a therapeutic measure is not mentioned.

In spite of these minor therapeutic omissions the author has been highly successful in condensing a vast amount of material and information into one small volume which presents the essential, fundamental principles of neurology in a manner which can be highly recommended to those beginning a study of neurology.

* * *

A HANDBOOK ON DISEASES OF CHILDREN. Including Dietetics & the Common Fevers. By Bruce Williamson, M.D., Edin., F.R.C.P., London. Fifth Edition. 1947. The Williams and Wilkins Company, Baltimore. Price $4.50.

This handbook contains both errors of commission and errors of omission. It is not up to date. It cannot be recommended.

MEDICAL JURISPRUDENCE

OPERATIONS UPON PERSONS LEGALLY INCOMPETENT TO CONSENT; RESTORATION TO CAPACITY TO CONSENT

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It is a general rule of law that a physician or surgeon cannot operate upon a person without that person's express or implied consent, or if the person is legally incompetent of consenting, then without the express or implied consent of one legally competent to consent for him.

Two classes of persons who are, by law, incompetent to give a legally valid consent are minors and mentally incompetent adults. Consent to operate upon such persons must be obtained from the person duly appointed to act as guardian, or in the case of minors with living parents, from the parents. This discussion will not be concerned with a situation where a physician or surgeon acts in cases of emergency to save life or limb.

A person who has been declared legally incompetent cannot give a valid consent to an operation. If a guardian has been appointed, then the guardian can consent to the operation. It often becomes important to determine whether a person who has been declared incompetent has been restored to competency, for if he has been so restored, he can, of course, give a valid consent and the physician or surgeon will be protected. Under sections 1470, 1471 and 1472 of the California Probate Code any person who has been declared legally insane or incompetent may apply, by petition, to the superior court of the county in which he was declared insane, or from which letters of guardianship were issued, to have the fact of his restoration to capacity judicially determined. After a trial if it is found that the person in question is sane and capable of managing and taking care of himself and his property, his restoration to capacity is adjudged and the guardianship of such person ceases. A restoration to capacity can be thereafter evidenced by a certified copy of the judgment of restoration.

Where a person has been committed to a state institution and is thereafter released, it is often difficult for that person to prove restoration to capacity and hence the physician or surgeon should proceed with caution. Under section 6728 of the California Welfare and Institutions Code, the superintendent of a State hospital, on filing his written certificate with the Director of Institutions, may discharge any patient who, in his judgment, has recovered. This in and of itself, however, does not restore a person to legal competency. Section 629 of the California Welfare and Institutions Code provides that a copy of the certificate of discharge may be certified and filed with the clerk of the superior court of the county from which the person was committed. Section 6729 further provides that "such certified copy of such certificate and the record of the same shall have the same legal effect . . . as a judgment of restoration to capacity made under the provisions of sections 1470, 1471, and 1472 of the Probate Code." Therefore, if a person has been committed to a state institution and thereafter is released, a physician or surgeon before accepting such person's consent to an operation or other treatment, should insist that the person produce a certified copy of the certificate of discharge with evidence of its filing with the Director of Institutions and of the filing of the certificate of discharge with the clerk of the superior court of the county from which the person was committed. If these requirements are not complied with, then legally the patient is still incompetent and therefore unable to give a valid consent to any operation.

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Indications for Surgery of the Ovary*

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SINCE its inception early in the 19th Century the surgery of the ovary, like all other surgical procedures, has undergone many changes, some good and some bad. As a whole, it has improved in line with progress made in the knowledge of physiology. Some of the misconceptions of a less enlightened period are still with us and need a thorough overhauling. This is particularly true of the indications for oophorectomy which altogether too frequently are based on a faulty interpretation of the importance of organic findings.

The original and sole indication for surgery of the ovary was the presence of a large tumor and the original and sole operation for the correction of that condition was ovariotomy. The operation originally introduced by Ephraim McDowell, in 1809, was modified by such great ovariotomists as Nathan Smith, Spencer Wells and Atlee, but the indication remained unchanged for nearly sixty years. Atlee[2] later extended the principle of the operation to the removal of large uterine fibroids. The early ovariotomists closely followed the precepts laid down by McDowell[15] in his review of a series of ovariotomies performed by him between 1809 and 1816. McDowell was deeply conscious of his responsibility in undertaking what was then a very hazardous operation, and when reviewing his work in 1819 he counseled that the operation should be undertaken only by well qualified surgeons. The closing remark of his review is a classical example of modesty and surgical conscience, and well worth repeating here. He said: "I think my description of the mode of operating and of the anatomy of the parts concerned is clear enough to enable any good anatomist, possessing judgment requisite for a surgeon, to operate with safety. I hope no operator of any other description may ever attempt it. It is my ardent wish that this operation may remain to the mechanical surgeon forever incomprehensible."

Empiricism in medicine and surgery was at its height in the last quarter of the 19th Century. No wonder then that speculation was rife to connect the ovaries with poorly understood functional disturbances. In 1872 Battey,[5] of Atlanta, Georgia, pleaded for the liberalization of ovariotomy to include dysmenorrhea and various neuroses. The immediate response was one of caution and restraint, but since the physiology of ovulation and menstruation was not well understood other speculative surgeons took up Battey's plea. The result was the wholesale removal of ovaries on any pretext. The development of anesthesia, antisepsis and asepsis lessened many of the hazards of surgery and no doubt fostered the liberalization of oophorectomy to the point of absurdity. The return to a saner attitude in ovarian surgery came with a better understanding of ovulation and menstruation, though according to recent reports the nuisance by no means has been eliminated. For instance, in a recent discussion of the physiological approach to the problem of oophorectomy, Meugert[16] pointed out that in a certain well-conducted hospital 75 per cent of 1,320 ovaries removed during a period of four years were found to be structurally normal, while only 25 per cent revealed disease. This serious indictment parallels Miller's recent report on hysterectomy,[17] subtitled, "Therapeutic Necessity or Surgical Racket?" Miller's report likewise indicates that sound indications for hysterectomy frequently are disregarded. Personally, I believe that the abuse of either of these operations is not so much willful infraction of surgical ethics as a lack of proper understanding of the physiology of these organs. If the

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Maker in his wisdom had chosen to place the ovaries in a position as readily accessible as their male counterparts the indications for ovarian surgery hardly would have reached the state of confusion present at the turn of the century.

THE MEANING OF OVARIAN SYMPTOMS

To evaluate correctly the importance of the ovary in a given set of pelvic symptoms often is difficult because simple functional disorders can manifest themselves by disproportionately disturbing sensory reactions, while major organic lesions, such as cystic neoplasms and cancers, may be relatively symptomless. Many vague sensory impressions, frequently blamed on the ovary, may have nothing to do with that organ, or if connected with the rhythmic change of the ovarian mass occasioned by ovulation or hormonal demands, not infrequently are emphasized by psychosomatic fixations. Past generations of physicians called these phenomena "pelvic neuroses" and in principle came close to the truth. It has often occured to me that young girls and older mature women seldom speak of ovarian pain. The reason for this is that the youngsters rarely are conditioned to the idea of ovarian pain until after the menarche when anxious parents and garrulous friends contribute their share of wisdom. Older mature women, on the other hand, have learned from experience that fleeting pelvic discomforts commonly are inconsequential and as such must be endured as part of the many minor sensory disturbances of every day life. In these two age groups psychic trauma either has not had a chance to do damage, or has been repaired by time and common sense. After the menarche many women become ovary conscious because of vague pelvic sensations incident to ovulation, menstruation and sex impulses. It is during the reproductive period that an understanding physician can do an immense amount of good toward the prevention of psychic trauma by mental education, just as the mechanically minded doctor can do an immense amount of harm by overstating or overemphasizing physical findings. I am thinking in particular of the doctor who elicits pain by forcibly palpating ovaries, thereby emphasizing the anxiety of the patient. In such circumstances not only the patient, but also the doctor, may become convinced that pain actually centers in the ovary, and should the ovary be enlarged at the same time because of functional manifestations the proof that the ovary is diseased may appear obvious. This common fallacy accounts for much ill-advised ovarian surgery and is thoroughly to be condemned.

To understand the interrelation of functional and organic manifestations means to have acquired a sound basis for the evaluation of pelvic sensations. To learn to localize pelvic pain means to understand pelvic neurophysiology. The sensory nerve system of the pelvic organs forms a complicated network of receptors of impulses. Sympathetic nerve fibers of the hypogastric plexus supply not only the uterus, bladder, ureter, posterior vagina, recto-sigmoid colon, but also the tubes, ovaries and pelvic peritoneum. Sensory impulses frequently overlap and only meticulous study can place them correctly, although often this is not possible in spite of close attention to diagnostic details. However, time and patience will reward the observant examiner with a satisfactory answer in most instances.

The mechanism of pelvic sensations is further complicated by many sensory fibers of the parasympathetic system coursing along the wide ramifications of the pelvic blood vessels. They record the tidal variations concomitant to ovulation, menstruation and sex impulses. Fibers from the lumbo-sacral plexus of the central nervous system approach the ovarian region largely through the broad ligaments supplying motor and sensory impulses primarily to the uterus. Many of the minor pelvic discomforts emanate from temporary vascular disturbances. All are intimately connected with the functional performance of the ovary. Midperiod, or ovulatory pain, is a good example. The dull pain of pelvic varicosities is another. The pain of so-called ovarian dysmenorrhea probably has nothing to do with the ovary proper, but is referred from the uterus unless due to ovarian endometriosis. The examples cited here emphasize the need for a clear understanding of the neurophysiology of the generative organs in order to arrive at a correct diagnosis.

Regarding the evaluation of ovarian enlargement it is simple to recognize large tumors of the ovary. It is more difficult to determine the nature of moderate ovarian enlargements. The so-called cystic ovary has been blamed for a variety of pelvic disturbances. The term "small cystic degeneration of the ovary" was coined by Hegar during a period when ovarian physiology was in a nebulous state. It put a stigma on a relatively harmless process that has resulted in an outbreak of wholesale surgery by no means under control today. Every ovary, at some time or other, ripens follicles beyond the normal demands. This is a temporary process always followed by regression. It is not a pathological process in the sense of a degeneration, and notwithstanding the opinions of Stein.[23] Weed.[25] Raycraft.[19] Robinson [20] and others, it is not an indication for surgery. It is not detrimental to health and, in the opinion of many, does not influence fertility. Such solitary cysts as the follicular or retention cyst of the graafian follicle represent a hydrops of this structure. They differ from the small cystic changes in showing remnants of granulosa or theca cells. They commonly regress spontaneously in time, or can be influenced by long-continued oral estrogen therapy. Occasionally such cysts may persist and if found to enlarge beyond the size of a golf ball, may be sufficiently annoying to warrant enucleation. Corpus luteum cysts, characterized by their yellow color, and at times by the presence of old hemorrhage, regress and absorb like the previously mentioned type, although occasionally the hemorrhagic cyst may persist for many months. The relatively uncommon hylus and parovarian cysts are of Wolffian duct origin but rarely give symptoms unless of appreciable size.

Excepting the last group, cyst formation in the ovary, other than of neoplastic origin, is an expression of endocrine imbalance. Some years ago Fluhmann,[10] of our department, demonstrated that ovaries of rats become cystic under an overload of gonadotropic hormone. This work corroborated that of other investigators. The assumption is that pituitary demands on the ovary lead to an unusual activity in follicular ripening and when an adequate amount of estrogen is supplied, either physiologically or therapeutically, such pituitary impulses cease and cyst formation regresses. Reports by Karnaky,[12] Hamblen[11] and Patton,[18] and my own observations, point in the same direction. It has been my experience that follicle cysts of considerable size respond to long continued estrogen therapy. Today most gynecologists hold that enlargements of the ovaries during the reproductive years are harmless, although at times accompanied by distress. The present disregard for them is a healthy reaction against the surgical meddling of the past.

Menstrual disturbances ranging from amenorrhea to polymenorrhea are not the rule with ordinary cystic dysfunctions of the ovary and rarely occur in the presence of neoplastic tumors, except with so-called functional tumors. Where pituitary dyscrasias lead to the formation to persistent follicle cysts without luteinization or simultaneous hyperluteinization of graffian follicles, the endometrial pattern changes accordingly and the rhythm of menstruation becomes erratic. As previously pointed out, this occurrence is not a basis for ovarian surgery unless not correctable by adequate hormonal therapy.

Ovaries are remarkably resistant to infection and even badly infected ovaries may yet recover if given sufficient time and care. Pain sensations frequently cease with the regression of hyperemia and edema and disappear completely unless such an ovary becomes fixed in a vulnerable position. If adherent low in the cul-de-sac it may become a cause for dyspareunia, or if adherent to bowel and broad ligament the constant tugging of peristalsis on the immobile ovary may set up persistent discomfort due to peritoneal irritation. In time, this may disappear and none of the instances mentioned should be made an indication for surgery unless permanent disability is manifest.

Endometriosis of the ovary ordinarily becomes a source of pain only after the organ becomes adherent to adjacent peritoneal surfaces and tissue irritation provokes inflammatory reactions. Referred pain from pelvic varicosities, ureteral disturbances and localized diverticulosis or colitis frequently are mistaken for ovarian pain, particularly if this organ is found to be more tender than expected. What I wish to bring out in this discussion is that the proper interpretation and evaluation of ovarian symptoms necessitates careful scrutiny of a number of possibilities of error in diagnosis. Excepting ovarian hemorrhage and cancer there never is any need for haste, and fortunately serious ovarian hemorrhage is rare.

SURGICAL CONSIDERATIONS

Oophorectomy. The common cystic ovary is not an indication for oophorectomy. The removal of such an ovary solely for symptomatic reasons is indicative of ignorance. The right ovary frequently is made the victim of such careless practice because it can be reached conveniently through an appendectomy incision where the appendix has failed to explain right lower quadrant pain. Victor Bonney[6] pointed out that sufficient clinical evidence has accumulated to permit us to believe that ovarian functions do not exist as a whole in each ovary and that to remove an ovary on slight provocation under the assumption that the remaining ovary is fully functioning may invite serious physiologic disturbances. Buffe's[8] autopsy compilation on incidental ovarian cystic changes records their presence in 75 per cent of all women studied.

Chronic abscess formation incident to puerperal infection warrants oophorectomy if conservative measures have failed and serious disability is manifest. The same holds true of tubo-ovarian abscesses, though many become symptomless in time. Oophorectomy for uncontrollable menorrhagia is justifiable only as a life saving measure and then only if irradiation therapy is not feasible because of the time element involved.

Benign neoplastic tumors, whether solid or cystic and unless they can be removed at their inception by resection or enucleation, demand unilateral or bilateral removal of the ovaries, according to age and circumstances. All malignant neoplastic tumors evidently demand the complete removal of all reproductive organs, the exception being tumors of low grade malignancy such as dysgerminoma, granulosa cell tumor and arrhenoblastoma which, if strictly localized, may be treated by unilateral salpingoophorectomy in the very young and in the early reproductive period. When encountered later they should be treated like all other ovarian malignancies.

Steadily enlarging cysts, regardless of their nature, not responding to estrogenic therapy should be surgically investigated when they grow larger than the approximate size of a golf ball. It is evident that cysts producing pain by twisting of the pedicle or intracystic hemorrhage must be removed, and only direct inspection permits the determination of their true nature. Pseudomucinous cysts occur less commonly bilaterally than serous cysts. It is worth remembering that only 5 to 7 per cent of the former become malignant, while the latter show an overall incidence of malignancy of more nearly 50 per cent. At times it is difficult to differentiate benign from malignant cysts at operation. It is therefore a good rule to treat all cystadenomas as clinically malignant whenever adenomatous tissue has penetrated the capsule. Teratomas, of which dermoids form the largest group, rarely become malignant and often can be enucleated if they are not too large. Since dermoids rarely lead to sterility, it is advisable not to disturb them until the family has been completed. Though enucleation is preferable to total removal,

large dermoids are better treated by oophorectomy.

The tapping of ovarian cysts to facilitate their removal is questionable practice in the best of circumstances because of the threat of unsuspected malignancy, although at times it becomes necessary in the presence of large tumors. Whenever malignancy is suspected it is better to remove the cyst in toto, through as large an incision as is necessary, rather than to tap the cyst. All unilateral cysts should be inspected immediately upon removal. If there is the least indication of malignancy, all generative organs should be removed in women of 35 years or older. In younger women unilateral oophorectomy is good practice. For some months following unilateral oophorectomy the remaining ovary will undergo compensatory hypertrophy, sometimes accompanied by local discomfort. The need for careful and frequent examination is mandatory if the operation had been performed for neoplastic disease. Sensory disturbances disappear when hypertrophy has ceased.

Tumors suspected of malignancy, even if clinically of doubtful operability, should be explored without delay. If they are found to be inoperable, the extent of the involvement should be determined, biopsy taken and the abdomen closed. It is poor practice to attack evident insurmountable surgical difficulties, particularly if technical experience is limited. This type of surgery is better left to those intimately acquainted with cancer of the pelvis and abdomen. It is our practice to abstain from handling of fixed malignant tumors after obtaining a biopsy and ascertaining the extent of the growth. In such cases, patients are then adequately treated with high voltage x-ray therapy, as circumstances dictate. It has been our experience that malignant tumors so treated can be removed with comparative ease and with a decidedly better prognosis. The contraindications to exploratory surgery are advanced cachexia, masses in the upper abdomen, and demonstrable metastatic invasion of major structures.

It has never been satisfactorily proved that ovarian dysmenorrhea is intrinsic except in the presence of endometriosis. Since former experience indicates that intractable dysmenorrhea disappears with the removal of the uterus, pelvic sympathectomy should take the place of the destructive operations. Where extensive endometriosis exists, removal of the ovaries becomes necessary. In young women, particularly those who have not borne children, it has been our custom to practice conservative surgery. We have excised localized endometrial implants with satisfactory relief and have been gratified to see our patients bear children. Their return for future surgery or x-ray therapy can be held to a minimum if patients for conservative surgery are selected judiciously.

In most instances of tubal gestation the ovary need not be removed, even if markedly congested. It has been our experience that such ovaries recover in 75 per cent of the patients without future discomfort. The rare corpus luteum hemorrhage or early ovarian pregnancy likewise can be treated conservatively by enucleation or resection. The less suturing material is used, the better will be the recovery. Follicular or corpus luteum hemorrhages probably are more common than might be suspected. Many are of little importance though they may produce alarming discomfort. Their characteristic appearance time coincides with ovulation or the degenerative period of the corpus luteum. Frequently they are mistaken for tubal gestation. Unless they are accompanied by signs of massive intra-abdominal hemorrhage, no surgery is indicated. Evidence of serious bleeding demands prompt action. However, oophorectomy is not indicated, since simple enucleation of the offending follicle or corpus luteum and closure of the rent with fine mattress sutures will prevent further bleeding.

Resection of Ovaries. This procedure was devised for treatment of the so-called polycystic ovary, looked upon by most gynecologists as the result rather than the cause of hormonal dysfunction. We no longer resect ovaries, because we believe that adequate hormonal therapy regulates endocrine dyscrasia with the subsequent regression of the cystic disturbance. Among the enthusiastic adherents to this operation Irving Stein is the most consistent. He has reported three series over a period of 15 years, describing his results in relation to a variety of symptoms ranging from amenorrhea to sterility. Stein is cautious in his deductions and offers no explanation for his results. Similar reports by Weed, Raycraft, Bailey[4] and Robinson, likewise fail to explain why the resection of cystic ovaries cures amenorrhea, menorrhagia and sterility. My personal reaction is one of healthy skepticism, particularly since I have experienced excellent results with adequate endocrine therapy plus psychotherapy. Resection is done for so-called polycystic ovaries, an exaggerated phase of the so-called small cystic degeneration. Stein claims that the condition cannot be diagnosed readily by palpation only, but that it can be demonstrated by pneumoperitoneum. Von Wagenen and Morse[24] reported the rapid regeneration of resected ovaries in experimental animals and pointed out that as little as 6 per cent of residual ovarian tissue can maintain a normal endometrium in monkeys. The suturing of ovaries was studied in dogs by Leltschuk.[14] His work showed that continuous sutures favored tissue degeneration and adhesions. Some of the adherents of resection of ovaries for cystic disturbances advocate that interrupted sutures be used together with omental grafts to prevent adhesions. In the opinion of many gynecologists resection of ovaries is a highly questionable procedure, not based on sound physiologic principles.

Suspension of the Ovary. This operation went with the routine suspension of the symptomless retroverted uterus. We have not practiced it for many years though an occasional advocate waxes enthusiastic over this procedure. Primary prolapse of an ovary probably is part of the manifestations of constitutional inferiority so often stigmatized by general

visceroptosis. The low placement of ovaries in conjunction with uterine displacements is not a prolapse in the true sense, though it is well known that such ovaries may be productive of disturbing sensory impulses. A properly placed pessary to correct the uterine displacement is a simple method for evaluating the origin of the discomfort. Recently Rutherford [21] discussed a small series of patients presenting various complaints traceable to prolapsed ovaries. He came to the conclusion that conservative treatment brought prompt symptomatic relief. Minor types of lengthening of the mesovarium are common after childbirth and correct themselves spontaneously. I fully agree with Rutherford that surgical correction of this condition is a highly questionable procedure.

The Preservation of the Ovaries at Hysterectomy. For some unknown reason it has become traditional in many quarters to remove normal ovaries near or during the menopause in connection with hysterectomy for benign lesions. The usual reason given is that the ovaries left in situ after hysterectomy will degenerate and form cysts. Others claim that it is advantageous to remove the ovaries to prevent future ovarian malignancy. Still others think that the ovaries are unimportant any time after 40 and might just as well be removed. All these assumptions are open to question. The ovaries have a definite function for a considerable number of years after they have ceased to ovulate. They do not degenerate nor form cysts if adequate circulation is preserved and the organ is properly anchored to prevent vascular distortion. In my long experience I have encountered only four patients in whom ovaries formed large retention cysts subsequent to hysterectomy and required removal. All were young individuals operated upon for pelvic inflammation with both ovaries smothered under adhesions. At the subsequent operations the ovaries were found to be severely ischemic, indicating that ovarian circulation had been damaged beyond repair. Many years ago Sampson [22] pointed out that the tubo-ovarian circulation presents many variations and that at the time salpingectomy is performed, circulation to the ovary may be interrupted inadvertently. In his opinion, the resultant ischemia favors the formation of postoperative retention cysts by disturbing the intrinsic metabolism of the ovary. Salpingoophorectomy often is performed because it is simpler to do than salpingectomy. I hold with Bonney [7] that the ablation of healthy ovaries merely to facilitate a surgical procedure is unjustifiable. That ovaries function after hysterectomy, has been substantiated experimentally. Badain [3] showed conclusively in dogs that while functioning follicles decrease in numbers within one year after hysterectomy, the ovaries continue to function within normal range of estrogen production. As far as our clinical experience goes, cystic degeneration of the ovary after hysterectomy is not common and ovaries should not be removed just because of fear of future malignancy. The ovaries were meant for a purpose and no man should set himself above that purpose by destroying them unless serious disease permits no other choice than castration.

Elective Castration for Cancer of the Breast. There is evidence that cancer of the breast is retarded after castration. There is also evidence that this procedure does not cure breast cancer. Whether surgical castration is more efficient than x-ray castration is controversial. Adair [1] et al. reported that in their experience castration retarded breast cancer by about two years. I hold with Loeb that cancer of any kind, after reaching a certain stage of development, becomes capable of growing independently of hormonal stimulation. However, any method which provenly will retard the spread of cancer is a good method, though it may not be curative.

Ovarian Grafts. Autogenous transplantation of ovarian grafts has fallen into disuse with the advent of endocrine therapy. However, it is still good practice when ovaries must be removed in the young. Grafts will last two years or more, according to the age of the patient. Some grafts have survived many years and even those that have ceased ovulating exercise an ameliorating influence on the onset of the climacteric. Butcher's experiments [19] conclusively show that ovarian implants regenerate rapidly in the young, but not in more mature animals. The process evidently depends on proper blood supply and on pituitary action. Butcher showed that excision of the pituitary gland prevents regeneration. Kuhn [13] recently reported that menstrual function in an appreciable series of patients was preserved almost 100 per cent for many years. Ovarian transplants fare best when placed between the rectus muscle and the peritoneum, since they commonly fail to grow when in connection with adipose tissue. Prior to 1925 we transplanted ovaries frequently and successfully in this manner. We now rarely practice this procedure. The danger in transplanting ovaries is the inadvertent inclusion of minute endometrial implants. Such implants will become painful in time and are not readily removed since they may invade muscle tissue. The availability of oral estrogens obviates the need for this operation and, unless indicated for psychosomatic reasons, may be considered unnecessary.

SUMMARY

The purpose of this presentation was to review for the general practitioner the basic factors underlying the surgical treatment of the diseased ovary. Certain important aspects of the physiology, neuro-anatomy and psychology were discussed and the need for a better interpretation of symptoms was emphasized. Shortcomings in arriving at a diagnosis and formulating indications for surgery of the ovary were pointed out. The need for conservative surgery on one hand and the necessity for radical surgery on the other were explained. The need for more thoughtful treatment of the ovaries was emphasized. Present trends of questionable ovarian surgery were reviewed in the hope of stimulating a more healthy regard for the female sex glands.

DISCUSSION BY ERLE HENRIKSEN, M.D., LOS ANGELES

I disagree with Dr. Emge on one point, that is, he has presented this very timely subject all too mildly. The failure of the surgeon to appreciate the normal physiologic changes of the ovary results in the sacrifice of many normal ovaries.

There are several points in this excellent paper that should be emphasized.

1. The so-called physiologic cysts, those harbingers of normal activity, are notorious for their evanescent properties. This is especially true of the corpus luteum cyst that tends to appear and disappear repeatedly. We have never employed estrogens in the treatment of this type of cyst, as most of them tend to disappear spontaneously, without treatment. One is frequently embarrassed to find that a supposed cyst of the left ovary is in reality only a loop of the sigmoid. Certainly the removal of these functional cysts is meddlesome surgery and may well predispose to future trouble with the ovary. And rare is the surgeon who can withstand the overwhelming temptation to needle the small cysts of the right ovary after removing the appendix. Woman should be forever grateful to McBurney and his incision, which at least protects the left ovary from this tinkering procedure. This widely accepted meddling is not infrequently followed by troublesome adhesions.

2. I am decidedly skeptical of the value of resecting polycystic ovaries for the relief of amenorrhea, sterility and dysmenorrhea. One can almost hear the ghost of Battey voicing assent when this procedure is mentioned. Certainly the ovarian changes reflect an end result and not the cause of a hormonal aberration.

3. The frequent misdiagnosis of all tarry or chocolate cysts of the ovary as being of endometrial origin accounts for the sacrifice of many normal uteri and ovaries. The percentage of these cysts due to endometriosis is problematical, but the overenthusiasm for the diagnosis of endometriosis is unwarranted. Except in the most extensive involvement, conservation of ovarian function is advisable in younger women. Of 36 young women treated conservatively for pelvic endometriosis, only two have required a second operation. Five of the 36 have conceived. In most instances a presacral neurectomy is a valuable adjuvant.

4. The recent interest in prolapsed ovaries brings up the problem of treatment. With the patient in the knee-chest position, the insertion of a bi-valve speculum will often help replace the bothersome ovary into a more comfortable position. Surgery is rarely indicated.

5. Ovarian neuralgia or ovaritis is a fairly common misdiagnosis. A more careful examination may reveal the ureter as the cause of the pelvic pain.

6. When there is a possibility of ovarian malignancy, immediate surgery is indicated even though the case appears clinically hopeless. It is impossible to make the diagnosis without direct study of the tissue. We subscribe to Dr. Emge's technic of irradiation of the inoperable cases and then reoperating at an optimum time.

The essayist deserves praise for his presentation. A more careful adherence to his advocated indications will prevent much sacrifice of normal pelvic organs.

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VIRAL DISEASES—A Panel Discussion

Moderator, HOBART A. REIMANN, M.D., *Philadelphia*

In the field of infectious disease, medicine has enjoyed several distinct eras. The first was the golden age of bacteriology opened by Pasteur. Next, beginning about 1920, came the age of virology, which now overlaps and coincides with the present era of chemotherapy and of antibiotics.

Progress in virology lagged because of the greater technical difficulties and because there were fewer suitable animals for experimentation on the viral diseases as compared with diseases of bacterial origin. In the past decades, however, viruses have been established as the causative agents of smallpox, poliomyelitis, mumps, varicella, yellow fever, influenza and others. As a result, great progress in the knowledge of these diseases has accrued. But only within the last 15 years or so has general attention been given to several conditions of obscure origin which almost certainly are caused by viruses, as, for examples, certain infection of the respiratory tract (viral pneumonias), and diseases heretofore not associated with viruses, as infections of the liver (viral hepatitis), of the intestinal tract (viral dysentery), of the myocardium, and of the urinary tract (abacterial pyuria). Yet the ultimate proof of viral etiology of most of these conditions is not at hand. Viral infections of the central nervous system are better known, but even at present only 10 to 20 per cent of the encephalitides can be diagnosed etiologically.

In this symposium, newer knowledge of influenza and viral pneumonias is presented by Doctors Eaton and Reimann. Doctors Hamilton and Hammon discuss the viral encephalitides; Dr. Nelson, the epidemiology of poliomyelitis; Dr. Meiklejohn, the viral infections of the liver and gastrointestinal tract. Advances in the knowledge of measles and mumps is dealt with by Dr. Pearson.

The Etiology and Epidemiology of the Virus Group of Encephalitides*

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ALTHOUGH we have at our disposal a wealth of knowledge regarding quite a long list of virus diseases, regarding certain groups (grouped by anatomical systems with major pathology) we must admit of great gaps. Outstanding among these are the virus diseases of the respiratory tract, of the gastro-intestinal tract and those of the nervous system. Fortunately the title of the paper assigned to me, "The Virus Encephalitides," makes it possible to omit those affecting principally the peripheral and sensory nerves, which would require discussing the possible etiology of some of the poorly understood peripheral neuritides, herpes zoster and others even less well understood. I will also avoid consideration of the much discussed and abused Guillain-Barré syndrome since, although involving the central nervous system to some extent, it can seldom be termed an encephalitis.

Von Economo's Encephalitis: From an historical standpoint Von Economo's encephalitis, or *encephalitis lethargica* is the most important of those claimed to be of virus origin. Much can be said to support this pretender to the title, but in the final analysis it appears that the etiological agent or agents responsible have never been isolated, nor has the disease been experimentally transmitted by a bacteria-free filtrate. Whether the causative agent, once present in epidemic and endemic distribution, is still with us cannot be determined. It would seem preferable, therefore, that any encephalitis now encountered which appears to resemble the Von Economo type and which cannot be etiologically diagnosed, should be called *encephalitis, type undetermined*, rather than *encephalitis lethargica* or *epidemic encephalitis*. Of the mode of transmission of the old epidemic disease we know practically nothing.

Hemorrhagic Encephalitis and Disseminated Encephalitis: In recent years Russian investigators claim to have isolated viruses for what they call "Acute primary hemorrhagic meningo-encephalitis," [13] and for a "disseminated encephalitis." [14] Both of these viruses were isolated from blood or spinal fluid, or both, by the inoculation of mice. The virus causing the "disseminated encephalitis" is also claimed to be the etiological agent for chronic multiple sclerosis. My personal opinion from studying these Russian manuscripts is that until these findings are confirmed, one might well reserve coming to any definite conclusion. The Russians have thrown but little light upon the epidemiology of these diseases.

Herpes Encephalitis: Encephalitis caused by the virus of herpes simplex (labialis) should, in my opinion, receive much serious attention. The virus has now been isolated from several fatal cases and confirming evidence has been obtained by the demonstration of eosinophilic intranuclear inclusion bodies in certain large neurons, particularly those of the hippocampus. Since herpes virus is responsible for a latent infection in most of us, simply isolating the virus from human tissue carries little significance alone; but intranuclear inclusion bodies, though not pathognomonic, are characteristic of its pathology and indicate activity and damage to the cells in which they are found.

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If this widely distributed virus (which also shows definite neurotropic tendencies in the mouse and the rabbit) is responsible for occasional fatal cases of encephalitis, it is quite probable that it accounts for numerous nonfatal encephalitides. So far, none such have been definitely diagnosed, but only because we have no adequate virus laboratory test to assist us. Primary herpetic infection of infants and children, usually in the form of a diffuse stomatitis, can be diagnosed by isolating the virus from the vesicles and by serum neutralization tests performed on the membranes of chick embryos. Most adults, however, have neutralizing antibody, and periodically manifest activity of the agent in the form of vesicles of the muco-cutaneous border. The problem as to how to diagnose a non-fatal invasion of the nervous system remains a challenge.

With the problem of the epidemiology of herpes labialis unsolved, it is best to admit complete ignorance as far as that of the central nervous system is concerned.

Post Vaccinal and Post Infection Encephalitis: Post vaccinal encephalitis and post infection encephalitis still remain the mystery they have been in the past. We recognize them and describe them by name as following the immunization or disease which precedes or accompanies them (post rabies vaccine, post vaccinial, post measles, post chicken pox, etc.). The primary agent and the precipitating factor are not known.

Rabies: Rabies definitely belongs in this group. It can be adequately diagnosed. The virus agent can be isolated and the epidemiology is pretty well known. Nevertheless there is much more to know about immunization procedures and too much has been blindly accepted as having been proved before our time.

Mumps Meningo-encephalitis: Mumps encephalitis can very fortunately now be taken out of the realm of the unknown. Mumps meningo-encephalitis, (as it should really be called) with or without parotitis appears to be due to the action of the mumps virus *per se*. These infections can be diagnosed with considerable certainty through the complement fixation test.[1-3] Before this was developed by Enders and his co-workers, these encephalitides were usually not properly diagnosed unless accompanied by parotitis. In several series of cases, mumps virus has been shown to be the most frequent cause of infections diagnosed as lymphocytic choriomeningitis or benign aseptic meningitis—much more frequently than the more publicized lymphocytic choriomeningitis virus. Although the manner of transmission of mumps is fairly well understood, the precipitating factor accounting for involvement of the central nervous system and its meninges is unknown.

Lymphocytic Choriomeningitis: Lymphocytic choriomeningitis seldom assumes an encephalitic form, manifesting itself more frequently as a meningitis. The agent causing this infection, it is reported, can be rather readily isolated by the inoculation of guinea pigs or mice with blood or spinal fluid. This has not been true in the several hundred cases that have been brought to my attention, or at least in those that were diagnosed as such clinically. Since this virus spreads occasionally in a mysterious way to laboratory animals and to laboratory personnel engaged in working with it, any isolation made in a laboratory where it is being currently handled is not to be accepted except after very critical evaluation. Neutralization tests for this infection have never been placed on too critical a basis. Many normal persons possess neutralizing antibodies, so a diagnosis must be based on a very significant elevation of titer through a series of two or more specimens spaced at a suitable interval. The complement fixation test appears to be a more reliable and more practical test,[16] but suitable antigens are not generally available. There is a definite danger to the worker to be encountered in the preparation of the antigen.

The epidemiology of this infection is as yet very poorly understood. Many rodents have been found naturally infected, and their urine, in particular, is infectious. It is generally assumed that infected mice serve as a primary source of human infection. However, numerous biting arthropods have been shown to be capable of transmitting the virus under experimental conditions. Some of these arthropods cannot as yet be ruled out as possibly serving as vectors to man.

Poliomyelitis: Poliomyelitis, though usually leading to symptoms indicative of motor involvement only, may occasionally produce clinical encephalitis. This is a somewhat more frequent manifestation of the disease in adults than in children and has been noted as a peculiar characteristic of two probable food-borne outbreaks. Sporadic cases may present a very difficult diagnostic problem, particularly if occurring in an area where cases of one of the arthropod-borne virus encephalitides may be expected. Unfortunately there is still no laboratory or clinical means of establishing the etiological diagnosis of poliomyelitis except by isolation of the virus, or, in fatal cases, by pathological examination of the cord and brain. Attempts to isolate the virus are by no means one hundred per cent effective. They are costly (usually in excess of one hundred dollars) and, since the virus can be isolated from the feces of a small proportion of the normal population, are not necessarily diagnostic even when successful.

The epidemiology of poliomyelitis is not something to discuss in a paper of this length, and another paper on this program is devoted to the subject. Suffice it to say here that despite the acrimonious debate, and lengthy, confusing papers on the subject, far more factual data have been obtained on the means of transmission, distribution and characteristics of the etiological agent than for measles, chicken pox, mumps and many other common virus infections. There is overwhelming evidence to indicate that contact plays an important role in most outbreaks, that infection without diagnosed disease is more common than the paralytic infection, and that this results in a certain degree of immunity.

Arthropod-borne Virus Encephalitides: The arthropod-borne virus encephalitides include diseases caused by what is now recognized as a large group of viruses. Many of these can be readily handled in the laboratory and the diseases can be rather accurately diagnosed through *in vitro* and *in vivo* tests. New viruses which belong in this group are being isolated at frequent intervals, although it appears quite likely that several more will have to be discovered before antigens will be available in the laboratory to diagnose all cases. Most of these viruses are of approximately the same size, all are almost equally pathogenic for the mouse, but they differ considerably in their ability to produce disease in many other animals and in the chick embryo. Several, including the St. Louis, Japanese B and West Nile viruses, are immunologically related. Others, like the Western equine, the Eastern equine and the St. Louis viruses, may occur in the epidemic or endemic form simultaneously in the same areas, and the latter two at least appear to have the same vectors and same reservoirs, indicating a very close epidemiological relationship. It would not surprise me in the least if many of these derive from a common stem.

I will make no pretense of naming all the known viruses now suspected of belonging to this group. In this country we have two so-called "equine" viruses, the Eastern and the Western types, the St. Louis type and the California type, a new one, which has been isolated three times now in our laboratory [5] although we have not fully described it yet in any publication. Although by serological studies man appears to be infected by the virus, in only one case, that of an infant, have we been able to establish with any certainty a relation between infection as revealed by antibody formation and severe clinical encephalitis.[5]

In recent years, through fatal cases occurring in our armed forces abroad, we have become very conscious of Japanese B encephalitis and the Venezuelan equine type.

Clinically, all these diseases present a remarkable similarity, the greatest single distinction being probably one of difference in case fatality rates. The Japanese B and Eastern equine types result in a high proportion of severe and fatal cases, while the Western equine and St. Louis types are recognized as being somewhat more benign.

Epidemiologically, these present a most fascinating and complicated puzzle which is gradually beginning to unfold. Isolation of the viruses from mosquitoes [6] and demonstration of the vector ability of mosquitoes [7,8] as in malaria, dengue and yellow fever, was not adequate. These encephalitic viruses apparently were not passed thus from man to man or from horse to horse or even from horse to man. In the studies carried out in our laboratory and field units on the St. Louis and Western equine viruses, domestic fowls were next incriminated as probable short term reservoirs of infection from which mosquitoes became infected.[4,9-11] This, however, did not satisfy all the requirements to complete the cycle, nor did it fulfill all criteria of a reservoir.[4] When we attempted to control infection in the field by partially isolating all the fowl from mosquitoes, the cycle was not adequately broken.[12] Others found chicken mites infected with these viruses and postulated that they were the true virus reservoirs.[17,19] For the St. Louis virus congenital transmission was demonstrated in the mite.[18] We could not incriminate these mites, however in our Kern County, California, or Yakima Valley, Washington, studies. Our attention was forced more and more to potential hosts with which it is much more difficult to work—the wild birds. There turned out to be over 120 species in Kern County and their nests contained numerous blood-sucking parasites. Blood smears from these birds reveal about ten different protozoal infections including many species of avian malaria, all probably transmitted by blood-sucking parasites. Some of these protozoal parasites, it was then discovered, were being transmitted to an important degree by the principal encephalitis vector, *Culex tarsalis*.[13] This gave definite evidence of the encephalitis vector feeding on wild birds. Study of a small series of wild birds which were trapped for laboratory inoculations indicated that they were possibly even better potential sources for mosquito infection than chickens.[5] Among the ectoparasites found in wild bird nests we found at least one species of mite infected with the Western equine virus [15] and another pool of mites has yielded a virus with certain of the characteristics of the St. Louis virus, but also with characteristics of the Western equine.[5] We have been working for some time trying to determine whether we are dealing with a mixture of the two or with a more complex type of "stem" strain which could theoretically more readily exist in the possibly more primitive mite reservoir. It becomes, therefore, readily apparent that these viruses have a very complex biological cycle and there remains much to learn.

Studies on Japanese B virus are following similar trends and some of these are also being carried out in our laboratories. I have just returned from my third trip across the Pacific on these studies and will spend the summer there again this year. At present there appears to be little evidence to incriminate birds as reservoirs for Japanese B encephalitis, but of the mosquito vector there appears to be good evidence.

There arises the question of how these cases of the arthropod-borne virus encephalitides can be diagnosed. I would like to call attention to the facts that an etiological diagnosis will not influence therapy and that rarely can such a diagnosis be made while the patient is in the acute state of the disease when specific therapy, if it existed, would be of utmost importance. This is not said to diminish interest in accurate diagnosis, but to emphasize that in these diseases our present diagnostic aids lead to a diagnosis in retrospect only.

Spinal fluid, blood, pharyngeal washings and feces are practically useless as sources of virus isolations. Only brain tissue from fatal cases yields

virus with any degree of regularity. In the nonfatal case the diagnosis is made by complement fixation and neutralization tests performed on a *series* of serum specimens. Blood taken early in the course of the illness, when it first becomes apparent that the disease is an encephalitis, must be furnished the virus laboratory, and later one or preferably a series of specimens taken during convalescence, usually at 15-day intervals. Whole blood should be drawn in generous quantities (about 20 cc.) by aseptic technic and on a fasting stomach or at least three hours after a meal. It should be delivered to the virus laboratory within 48 hours and, if possible, the whole blood should be refrigerated constantly but never frozen. From the serum removed from such specimens, after the whole series has been received, or at least a series of specimens through the third week, the virus laboratory can in most cases make an etiological diagnosis, *if* the infection is due to one of the arthropod-borne group previously named.

If the case occurred in winter, late fall, or early spring, it is not one of this group of arthropod-borne infections. Neither is it likely to be if the patient was not exposed in one of the hot valley areas. So far, these diseases have not been recognized as originating from Los Angeles, San Diego, San Francisco or from the East Bay cities. As in making any differential diagnosis, the clinician should apply good epidemiological horse sense in searching for a diagnosis, avoiding the so frequently heard "Let's get virus studies done." These tests are at present entirely too difficult to perform to be done in other than a very few specially equipped virus laboratories supported by government or special research funds. Because they are so expensive and time-consuming, they should be reserved for properly selected cases. When the tests are done, specimens should be collected with real care and thought, with no expense or bother spared to deliver them to the virus laboratory in proper condition.

QUESTIONS AND ANSWERS

Moderator Reimann: This is addressed to Dr. Hammon: "The use of hyoscine and related drugs in post encephalitic states."

Dr. Hammon: "The only application that we have would be in the late stages, the sequellae of considerable duration. I haven't had any first-hand experience, but from what I have read about it, I understand that some benefit has been obtained in certain cases although for the most part with a rather temporary result, without any basic change in the condition of the patient."

Dr. Reimann: The next question: "Is there any relation between rickettsialpox and encephalitis?"

Dr. Hammon: "I don't know of any relationship between the new rickettsialpox and encephalitis. Of course, not having had any opportunity to see cases of rickettsialpox, and having read only one article about it in the literature, as far as I know it is not associated at all with encephalitis. It is a type of disease more characteristic of that seen with other rickettsial infections, such as typhus of the epidemic and endemic types, which are all highly toxic and produce a certain amount of encephalopathy, but encephalitis is not one of the outstanding clinical aspects of rickettsialpox, I am quite sure."

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Clinical Aspects of the Encephalitides*

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Encephalitis is an non-specific term, both anatomically and etiologically. Anatomically, few patients show involvement of the encephalon alone: in addition to variable degrees of damage here, there will also be some amount of meningitis, myelitis, or neuritis, singly or in combination. Etiologically, there are several viruses now known which cause primary encephalitis. There are also a few cases which follow certain immunization procedures, and a relatively large number secondary to other infections which are usually but not always of virus origin. These secondary cases may be and probably are due to the original infecting agent, though there is some support for the idea that they are caused by some other unknown agent or by toxins elaborated by the original agent or by some allergy-like reaction to it.

With so many variables and unknowns, it is obvious that there can be no such thing as *the* clinical picture of encephalitis. Final, undebatable diagnosis often must rest on virus neutralization and complement fixation studies. Routine blood counts may vary widely, though there is likely to be an increase in white cells with a predominance of polymorphonuclears. Spinal fluid findings also vary, with nothing characteristic of any given type of the disease. Sometimes the fluid is entirely normal: nearly always there is a moderate increase in pressure and in proteins, and an increase in cells which are usually lymphocytes. Thus this paper must be confined to the general clinical pattern of the various encephalitides, and may be most inaccurate in any single case.

Encephalitis A

The first and historically the most important type of primary encephalitis is the one described by von Economo and often called by his name. This disease has also been called lethargic encephalitis (which in many cases is a misnomer), epidemic encephalitis, and more recently encephalitis A. It is rarely seen at present, but it has occurred in widespread epidemics in this country and elsewhere.

This disease usually occurs during the winter season. Its incubation period is not known: it is thought to be about ten days in most cases, but it may vary from a few days to several weeks. It may involve any age, but is most common between 10 and 30 years. The mode of spread is not known, but direct transmission is rare.

In the classical case there are three stages: the acute stage, lasting from a few days to several months: a stage of remission, during which the patient may be well or nearly so, lasting up to several years: and a chronic stage which gradually appears and may well last until death. Not infrequently the first stage does not occur or is not recognized, in which case the first known evidence of the disease is the appearance of the chronic symptoms.

The first stage may be most variable. Five types are described: these, with their intergradations, make possible an infinite variety of detail. These types in brief are: (1) the somnolent, with little fever, and usually with marked extraocular palsies which are variable and changing; (2) the excited and overactive, with high fever, delirium, spinal root pain, involuntary movements, and pupillary changes, but with little paralysis; (3) the early Parkinson, with immobility, slow weak movements, insomnia and sleep reversal; (4) the fulminant, with high fever, delirium, convulsions, and often early death; and (5) the abortive, with transient pains, diplopia, headache, insomnia, and myoclonic movements. Neither the type nor the severity of stage I bears any constant relationship to the events to come in stage III.

The remission following the acute stage may not be one of complete normality. There may be pupillary or oculomotor defects, rigidity, ataxia, behavior or personality changes, or mental defects.

The symptoms of the chronic stage advance slowly and uniformly, without fever or acute signs. They include Parkinsonism; choreiform movements; tics and tremors; dystonia; cranial, bulbar, and spinal paralyses; convulsions; mental and personality changes; anesthesia and hyperesthesia; sleep disturbances; and a wide variety of autonomic and metabolic changes.

Mortality in the acute stage has ranged from as little as 10 per cent in some epidemics to as high as 70 per cent in others. The prognosis for complete and permanent recovery is poor.

Encephalitis B

Encephalitis B includes St. Louis and Japanese encephalitis and Australian X disease so far as clinical and pathologic findings are concerned, though their viruses are not identical and the mortality varies. These infections tend to occur in the summer, and may involve any age though the elderly are more susceptible. The mode of spread is still not known, but it is only rarely by direct contact.

There may be three or four days of systemic prodromes, or the encephalitic symptoms may begin at once, or there may be no nervous signs and a doubtful diagnosis made on spinal fluid changes plus accessory circumstances. The characteristic symptoms are fever, headache, signs of intense meningeal irritation (a cardinal symptom), frequently convulsions, drowsiness or coma, and delirium. The fever is constant, and lasts from three

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or four days to two weeks or more. Psychic disturbances are usual, including hallucinations, depression, confusion, and catalepsy; these last for one to two weeks. Muscular rigidity is very common, as are also involuntary movements of clonic or twitching type. Mild and transient paralyses are also common, involving the bulb with fair frequency. Pupillary changes also occur. The autonomic system is rarely involved.

The mortality of the St. Louis type is about 20 per cent, of the Japanese 33 per cent to 70 per cent, and of Australian X disease 70 per cent. Survivors usually become normal.

EQUINE ENCEPHALITIS

Equine encephalitis is divided into eastern and western types, which are clinically indistinguishable although the eastern tends to be more severe. It is a disease of warm weather, and is more likely to attack persons under ten years of age. It involves horses and mules, and is apparently transmitted from them to man by mosquitoes. There is reason to believe that the basic reservoir of infection may be in domestic or wild birds.

The prodromes begin with fever, headache, and drowsiness which deepens into stupor and coma. Vomiting and convulsions are usual, together with signs of severe meningeal irritation. These symptoms usually last about two weeks.

The mortality is high, in some series as much as 74 per cent: the average for the western strain is 5 to 15 per cent and for the eastern about 65 per cent. Survivors may be normal, but residuals are not rare. These consist of mental defect, personality changes, speech defect, pareses, ataxia, and spasticity.

POST-PASTEUR ENCEPHALITIS

The incidence of post-Pasteur encephalitis is reported as high as 12 per 1000, though general opinion is that the figure should be lower than this. The more completely inactivated virus gives a lower incidence of encephalitis. The symptoms are likely to begin after 10 to 14 days of treatment, and often there is warning in the form of malaise, headache or vomiting, and local reaction at the site of recent injections. The symptoms may be those of disseminated encephalomyelitis, Landry's ascending paralysis, transverse myelitis of the thoracic or lumbar cord, or peripheral neuritis especially of the facial nerves. Mortality is about 15 per cent, with survivors tending to make a good ultimate recovery.

POST-VACCINATION ENCEPHALITIS

Encephalitis following small pox vaccination has been reported as often as once per 1000 vaccinations; on the other hand, millions of vaccinations have been done without a case being noted. It is more common in older people than in infants, and more common in primary than in repeated vaccinations. It usually appears 10 or 11 days after vaccination, with extremes of two to twenty-five days, with headache, fever, vomiting, and convulsions. There is often severe cord injury with flaccid paralysis and sometimes anesthesia. Cranial nerves are rarely involved. The mortality is 30 per cent to 50 per cent, with survivors tending to regain normality.

MUMPS ENCEPHALITIS

There is probably some involvement of the central nervous system in most cases of mumps, if one accepts the evidence of changes in the spinal fluid without symptoms. Clinical findings are said to occur in from 1 per cent to 25 per cent of cases; the disease is usually mild and short, and the number of cases found undoubtedly varies with the alertness of the observer. It tends to occur at about the height of the mumps infection, but it may be found a few days before or after the primary infection or even when no mumps infection is noted. Most commonly the symptoms are limited to those of meningeal irritation, but there may be findings of encephalitis, myelitis, polyneuritis, and deafness. The prognosis is very good both for life and for normality, the only sequel being an occasional deafness.

MEASLES ENCEPHALITIS

Measles encephalitis is undoubtedly the most common of the more severe forms following acute infections, and therefore it will be discussed in some detail as it may serve as a general pattern for the disease as it occurs after influenza, chicken pox, rubella, and other infections.

Its seasonal and age incidence parallels that of measles. Its frequency is probably between one and four cases per 1000 cases of measles; these figures vary in different epidemics, and are inaccurate, as many cases of measles and some of the milder cases of encephalitis are not reported.

The onset of encephalitis may precede the rash of measles, or even precede the first symptom of that disease; or it may be delayed until well into convalescence. Most cases, however, begin in the period between the height of the rash and its disappearance. Symptoms of onset vary greatly. Fever is usually but not invariably present; its duration bears no consistent relationship to other findings. Changes in the sensorium almost always occur, usually as torpor or lethargy which often deepens into coma; but occasionally there may be excitement, restlessness, and disorientation. Convulsive seizures of all types are common, especially in the early stages and sometimes as terminal events.

Cranial nerve irritations and paralyses occur in all varieties; peripheral nerves show tremors, ataxia, paralysis, and paresis; urinary malfunction appears as incontinence, involuntary urination, and retention; and sensory nerves show disorders in pain, anesthesia, hyperesthesia, hypesthesia, and paresthesia. These and other findings occur singly and in combination; they may regress, recur, remain, or disappear.

The most consistent neurological signs are those of meningeal irritation, with one sign or more present in most instances, though a considerable

number is unaffected. Both superficial and deep reflexes are almost certain to show some alteration, though an occasional normal is found. These changes may be either hyper- or hypo-activity, with some tendency to inequality, and all subject to change on later examination.

Laboratory findings share the inconsistency and variability already noted. The white blood cells are usually increased to an average of 16,000 with occasional counts as high as 40,000, with a high percentage of polymorphonuclears; but cases have been reported with counts as low as 2800. Spinal fluid may be normal, and under normal pressure; but this is unusual. In most instances the pressure is moderately elevated, and the fluid contains 50 to 400 cells which are mostly lymphocytes; though occasionally they are polymorphs, especially early in the disease. Protein is usually increased, though here again there is the inevitable exception.

The prognosis for life is uncertain in any individual case, as the disease may progress, regress, or remain stationary. Mortality is about 10 to 20 per cent. About half of the survivors show sequelae of greater or lesser severity. Common and serious among these are personality and behavior changes and mental deterioration, sometimes to the point of idiocy. There may also be ataxia, spasticity, pareses and paralyses, aphasias, sensory disorders, bladder malfunction, sexual precocity, obesity, cachexia, and diabetes mellitus.

There is no specific treatment for this or any other form of encephalitis. In the encephalitis of measles, shock therapy has sometimes been followed by dramatic improvement. This treatment has not been thoroughly established, but I know of no other at present which offers as much encouragement.

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QUESTIONS AND ANSWERS

MODERATOR REIMANN: Dr. Hamilton, in what percentage of cases of measles do the encephalitic symptoms occur?

DR. HAMILTON: There is no way to determine that with certainty, because certainly a great many cases of measles are not reported, and likewise probably a good many milder instances of encephalitis don't get into the figures. It is estimated to run between one and four cases of encephalitis to a thousand cases of measles.

MODERATOR REIMANN: Dr. Hamilton, do you mean by "shock therapy" with typhoid vaccine, the fever produced by the vaccine?

DR. HAMILTON: I have no way of answering whether it is fever or whether it is something else that occurs along with the injection of the foreign proteidin. If you want my guess, I would say that it is probably the latter, for the reason that in a good many instances the temperature, as such, is already very high, without any apparent relief of the symptoms, whereas after the temperature has fallen, a similar fever induced by injection does sometimes improve the clinical aspects.

Present Concepts of the Epidemiology of Poliomyelitis*

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POLIOMYELITIS is a most fascinating disease. Probably never in the history of medicine has so much money been spent for research, so much work done, and so many facts elicited on one disease, with so little results.

A disease may be studied experimentally, in the laboratory, or epidemiologically, as it occurs in man. The laboratory worker can control his experiments, but must be careful in carrying his results over to man. For instance, the fact that monkeys are very easily infected by the virus of poliomyelitis by intranasal inoculation has been interpreted to indicate that this is the route of infection in man. The virus of equine encephalitis, however, which we know to be mosquito transmitted, is also infectious by this same route.

The epidemiologist, on the other hand, must accept the disease as it exists. He attempts to determine in whom the disease occurs, under what conditions, and how the individual or his environment may be altered so as to prevent its occurrence. Obviously a close working relationship between the experimentalist and epidemiologist is necessary for the most productive efforts.

ANIMAL EXPERIMENTATION

Animal experimentation in poliomyelitis has been extremely difficult because of the specificity of the virus. Until 1939 when Armstrong[1] adapted the Lansing strain to cotton rats and to white mice, the monkey was the only experimental animal. Because of the expense of running a large series of animals and the consequently limited size of experimental and control groups, many conclusions based on work done up to this time, such as virus neutralization studies, are subject to question. Animal experimentation has, nevertheless, been productive of many important facts. We have been able to isolate and study the virus. We know that it occurs in nasal secretions, that it occurs in enormous quantities in the stools, that there are many strains, and that during an outbreak many people are infected and harbor the virus, but few develop disease.

Recently Milzer and Byrd,[5] using autolyzed mouse brain tissue, have been able to adapt human poliomyelitis virus to white mice. Several blind passages are apparently necessary before recognizable disease occurs in the mice. This outstanding piece of work opens the door to immunologic comparison of different strains, and the possible production of monovalent or polyvalent vaccines of attenuated virus.

* Read as a part of the panel discussion of virus diseases before the section on General Medicine at the 76th Annual Session of the California Medical Association in Los Angeles, April 30-May 3, 1947.

EPIDEMIOLOGY

As a whole the epidemiology of poliomyelitis has been confusing. This writer believes that it is possible, however, to fit the known facts into a pattern that makes sense and points the way to the control of this disease.

Age Distribution

The age distribution of poliomyelitis, as we know it in the United States, is that of a widespread infection. In cities the age incidence is lower than in rural areas, the same as in measles. Thus in New York City in the 1916 epidemic, 78.8 per cent of the cases were under five years and only 3 per cent over 15 years. In rural New York, however, only 45.5 per cent were under five, and 19.1 per cent were over 15.

Virgin soil outbreaks of poliomyelitis,[2,6,7] on the other hand, show two outstanding characteristics not seen in populations previously invaded: (1) a remarkably greater susceptibility to the development of recognizable disease in adults as contrasted to children, and (2) an unusually high rate of recognizable disease in adults. Both of these characteristics are well illustrated by the following figures taken from the report of the New Guinea outbreak studied by Dr. Jean Macnamara of Australia.[7]

Village	Adults (Over Puberty) Cases per 100 population	Children (Birth to Puberty) Cases per 100 population
Mokereng	15.3	0
Papitalai	4.5	0
Loniu	6.1	0.8
Pak	5.8	0
Liap	16.3	2.1

Case Fatality Rate

A study of the case fatality rate of poliomyelitis in Massachusetts 1928-41 corrected for reporting (to be published) shows a case fatality rate under five years of 3.77 per cent and over 15 years of 11.94 per cent. Every clinician who has entered a large communicable disease ward during an epidemic is struck by the number of adults in respirators. Evidently the higher the age at which poliomyelitis is acquired, the more severe is the disease produced.

Age Distribution in Early Poliomyelitis

The earliest accurate descriptions of poliomyelitis are remarkable in two respects: the early age distribution and the absence of epidemics. Heine,[3] in 1840 pointed out that almost all cases of poliomyelitis in his experience occurred in the age group, 6-36 months. This is hardly the picture one sees with the introduction of a new infection. It is rather the

age distribution one sees with the development of specific immunity to an infective organism that is very widespread. The relative immunity of infants under six months of age points to the widespread existence of passive immunity in newborns. All of Medin's 44 cases occurring in Stockholm in 1887 [4] were under six years of age, and 35 of the 44 were under three years of age.

The second characteristic of early reports is the absence of epidemics. "No circumstance in the history of the poliomyelitis is so baffling as its change, during the last two decades of the nineteenth century, from a sporadic to an epidemic disease." [8]

No satisfactory explanation of this change has been given. Römer writes on this point: "It is curious that the older literature contains not a single reference to any epidemic, although infantile paralysis most certainly occurred." [8]

In view of the very young age distribution of early poliomyelitis and the absence of epidemics, one is forced to consider the possibility that the effective spread of virus was very high, that infection in the vast majority of instances took place at an early age, that therefore large concentrations of susceptibles were not built up, and that among those infected at that early age, a very low per cent developed recognizable disease.

It is an interesting corollary that, with improvements in general hygiene and sanitation in the past 50 years, the disease has attacked an older age group [9] and has at the same time become an epidemic disease.

Geographic Distribution

It is an interesting fact that the most severe epidemics of poliomyelitis have been reported from the parts of the world where hygiene and sanitation have reached their greatest development. The most remarkable exceptions have occurred in the Philippine Islands and Japan during the past two years. It is significant, however, that most of the recognizable disease in these outbreaks occurred amongst American troops who had been reared under conditions of relatively good sanitation, while the native populations remained relatively free of disease.

One might justifiably point out that reporting would not be as good in areas where sanitation was poor. Certainly, however, large epidemics would be recognized if they occurred, and the literature is remarkably free of mention of large epidemics in areas of the world where sanitation is poor.

Much evidence indicates that the virus of poliomyelitis is present throughout the world, and especially prevalent in areas of poor sanitation. "In the age incidence, as in the neutralization tests, we meet the paradox of the age incidence being lowest where the clinical disease is least prevalent." [10]

Institutional Outbreaks

Recently in Los Angeles a case of poliomyelitis broke out in a dormitory run under conditions of unimaginable filth. One hundred and ninety people, including 99 children under the age of 16, lived in 57 rooms. As many as eight people slept in a room 9x9 feet. There were nine toilets for 168 women and children. As this was obviously inadequate, old tomato cans were used for toilets by many of the children. There was a room 12x18 used as kitchen and dining room. We all expected a major outbreak, and were amazed when no secondary cases occurred. It seemed to us that only a very high general immunity status could have prevented more cases.

A short time before, poliomyelitis had broken out in one of our best run colleges. All the students came from good homes and had been reared under excellent conditions of sanitation. In spite of these conditions, 24 cases developed in a student body of 704.

While the literature is replete with reports of outbreaks of all other infectious diseases in institutions, it is amazingly lacking in reports of major outbreaks of poliomyelitis. Of three major institutional outbreaks of poliomyelitis which have occurred in the Los Angeles area during the past 15 years, all have involved adult groups. It would seem that when the virus infects the younger age groups a very small per cent show evidence of disease; while with the invasion of an older age group, especially one that has been reared under good conditions of sanitation, a much higher rate of recognizable disease occurs.

Relation to Other Diseases

In a recent paper read before the epidemiologic section of the American Public Health Association in Cleveland, Gordon Brown presented evidence to show that a much lower per cent of a group of children who developed recognizable poliomyelitis had antibodies to the Lansing virus than did controls. Zingher [11] in New York City in 1916 showed that 81 per cent of poliomyelitis patients at the Willard Parker Hospital were Schick positive while only 30 to 40 per cent of those in the control group were positive. This finding that children who developed recognizable poliomyelitis have apparently had less exposure to other infectious diseases would indicate that on the average they attain an older age (when more susceptible to the development of disease) before exposure to the virus of poliomyelitis.

CONCLUSIONS

1. The epidemiology of poliomyelitis indicates that it is a disease in which many people are infected but few develop recognizable disease: that a very definite status of acquired immunity to poliomyelitis exists in the population at large. Immunization with a mono or polyvalent vaccine is possible and will some day be perfected—but should be administered at an early age.

2. Epidemics of poliomyelitis have increased throughout the world wherever hygiene and sanitation have allowed the building up of susceptibles.

3. The earlier the age at which infection with the virus of poliomyelitis takes place, the less serious is the disease produced.

4. Our present hygiene and sanitation have not reduced the incidence of poliomyelitis. In fact, it may well be, paradoxically, that we have actually increased the incidence of poliomyelitis disease, while cutting down the general rate of infection through better hygiene and sanitation, by moving the time of original infection into the older age groups.

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DISCUSSION BY WILLIAM McD. HAMMON, M.D.

I would like to make one or two remarks in regard to poliomyelitis. It is certainly true that in a number of areas abroad that were visited by our troops during the war, the disease rate among our troops was higher than it was in our own country, and it also was higher than it was in natives of those areas of a similar age, which would tend to suggest that our troops were less immune than persons in some of these areas who have been brought up under more primitive types of sanitation. That is true of Japan, the Philippines, and North Africa where there was considerable poliomyelitis among American troops.

The British have pointed out that the poliomyelitis rate and the paralytic rate among their officers was considerably higher than among their enlisted men; and that might be due to some of these same factors.

I made a study a couple of years ago in a trailer camp in Marin County, California, where several cases of paralytic poliomyelitis occurred. At the time of the first case, we immediately began a clinic, and we examined practically every child in that trailer camp every other day. We took nose and throat swabs and tested these for poliomyelitis virus, and we particularly studied those taken from children who had any temperature or any other signs of infection.

The only viruses that we isolated in that trailer camp, except frank paralytic infections, which were mostly in adults, were from a smaller list of infants. Those infants were from six months to one and a half years of age, and all had a very minor type of illness. One or two days afterward, a few had a mild fever, but nothing diagnosable as poliomyelitis. And yet a number of the infants in that camp, particularly in the first week in which we began our study, were infected with the poliomyelitis virus.

I would certainly like to support Dr. Nelson's hypothesis —and many of us are thinking along those lines today— that we are losing this important immunizing experience, as far as poliomyelitis is concerned, in our infants, by postponing the age of infection. Of course, at the same time, we are preventing them from having many attacks of diarrhea and dysentery, which are highly fatal in infancy.

QUESTIONS AND ANSWERS

MODERATOR REIMANN: This question is for Dr. Nelson. "What is the 'low down' on the Kenny treatment?" (Laughter)

DR. NELSON: Well, there isn't any low down on the Kenny treatment. Her main contribution has been to make mechanical-minded physicians more physiological minded. There is, however, no question but that these patients, during the acute stages, are more comfortable.

MODERATOR REIMANN: "What is the present status of the Curare treatment?"

DR. NELSON: I feel very embarrassed, because I think either Dr. Hamilton or Dr. Al Bower should speak about this rather than I. . . . However, I don't think that the Curare treatment has reached a point where we can really give it an evaluation here. There are certain indications for trying the Curare treatment at this time, and out of those indications would be the persistence of a good deal of muscle spasm.

MODERATOR REIMANN: The next question is: "Is it not true that in Los Angeles, a much greater number of cases of poliomyelitis occurred among the Mexican population, which have a lower sanitation, both in Mexico and in Los Angeles, and therefore should have been less predisposed than the white population?"

DR. NELSON: No, that is not true. If anything, it is the other way around. I have been following the statistics very closely in Los Angeles for a good many years, and the highest incidence of recognizable disease has appeared in the white population.

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VIRAL PNEUMONIAS*

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IN 1861, long before the association of infectious agents with pneumonia, pulmonary invasion of a rather characteristic nature was recognized in measles. In subsequent decades a similar form of pneumonia was demonstrated in smallpox and in a number of diseases of animals eventually proved to be of viral origin. The clinical symptoms and lesions in most instances were obscured by secondary infections with pyogenic bacteria. However, the inconstant bacterial flora of the pneumonias studied during the pandemic of influenza in 1918-19, and the discovery of a few instances in which no bacteria were demonstrable, led many to doubt its primary bacterial origin particularly in regard to the misnamed influenza bacillus, and added support to the view that influenza was of viral origin.

In later studies, the experimental production of pneumonia with the viruses of vaccinia, psittacosis and influenza left no doubt that pneumonia occurs during systemic diseases caused by viruses, that it may be caused independently by filtrable viruses, and is characterized by the invasion of the structure of the lung and an exudate of mononuclear cells. Pneumonia has been described in lymphocytic choriomeningitis, vaccina and varicella. There is some doubt as to whether the pneumonias of the psittacosis group of diseases should be considered strictly as viral forms, since the causative filtrable agents differ from other viruses by their easy microscopic visibility and their susceptibility to penicillin.

Knowledge of the existence of the viral pneumonias just mentioned provided a pattern which led to the recognition of the so-called viral pneumonias of recent discovery and interest, and gives a background to their position as important diseases of the respiratory tract.

Before roentgenography was widely used, rales heard in the lungs of patients with banal diseases of the respiratory tract, particularly in the more severe forms, were regarded as signs of "a spot on the lung," congestion, bronchitis, bronchiolitis or "threatened pneumonia." That actual pulmonary involvement occurred became evident when between 1920 and 1935 several Europeans described transient pulmonary shadows in patients with colds. American observers, beginning with Arrasmith in 1930, reported an unusual kind of pneumonia in patients during epidemics of mild infections of the respiratory tract, and regarded the pneumonias either as influenzal in origin, as descending infections, atelectasis, or as complications caused by bacteria. Pneumonia occurs in a proportion of patients with the common cold, pharyngitis, grippe and other undifferentiated mild diseases presumably caused by viruses, but up to 1938 no efforts were made to establish its viral etiology or to rule out other causes. Since some of the diseases just mentioned are separate entities, the pneumonias accompanying them also are apparently of diverse etiology.

The viral pneumonias as now recognized were established as a syndrome and called to general attention in 1938.[1] Since then they have been the subject of much investigation, but their causes have not been firmly established. In this circumstance, as might be expected, there is controversy about nomenclature, especially over the terms "viral pneumonia" and "primary atypical pneumonia." But except for the final proof, all other evidence—namely, the analogy with known viral pneumonias, the epidemiologic aspects, the absence of special bacteria in the sputum, the absence of any bacteria in the lung at necropsy and the transmission of the disease to volunteers with filtered exudates—leaves little doubt as to the agency of viruses. A much clearer concept of the disease would be possible if it were not habitually compared with pneumococcal lobar pneumonia as a prototype of "typical" pneumonia, nor regarded as a descending infection or as a separate complication of mild respiratory tract disease caused by atelectasis or bacteria. The viral pneumonias are indeed "atypical pneumonias" when compared clinically with the lobar form, but they are typical in themselves and should be so regarded. There is even question about the word "pneumonia" since it serves to label only the pneumonic forms and excludes the greater number of nonpneumonic forms presumably of the same disease entities. Inclusive names to cover all variations of the respective diseases should eventually be coined and adopted as the causes are discovered. This unwittingly has been done in the case of influenza, for example, which term includes all graduations of severity of the disease. The broad term viroid has been proposed as a temporary expedient in the case at hand. For convenience in the present state of uncertainty and because of the clinical and pathological features of the various apparent entities are so similar, the syndrome to be discussed is referred to as viral pneumonia.

Incidence:

In the years after 1938, viral pneumonia increased greatly in recorded incidence due to an actual increase and to familiarity with it. There is reason to believe that the disease, like other respiratory tract infections, is endemic and rises periodically to epidemic and even to pandemic proportions. In my

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own experience, only a few sporadic cases appeared among the students and staff members before and after the large epidemic observed in a medical school hospital group in 1939. In the war years of 1942-43 viral pneumonia apparently became pandemic in this country, especially among the Armed Forces, but has now diminished to relative unimportance, just as influenza became pandemic in 1918-19 and receded. Viral pneumonia during the recent war years was the chief cause of serious acute respiratory tract disease and the cases far outnumbered those of the bacterial pneumonias.

Epidemics of pneumonic and nonpneumonic forms usually develop in the cold months, but may occur in any season. Sporadic cases, identical with those of the epidemic form and clinically indistinguishable from psittacosis, occur at any time of the year.

Etiology:

Intensive study to discover the cause or causes of viral pneumonia has yielded about 25 "new" related and unrelated filtrable agents, but most of them proved to be viruses resident in the animals used for investigation.[2] A few remain for serious consideration. The AP (atypical pneumonia) virus isolated from patients by Eaton and his co-workers is neutralized by serum from other patients who have had pneumonia and from those with mild nonpneumonic disease. It can be cultivated in chick embryos and transferred from animal to animal. Similar behavior is claimed for the PVM virus of Horsfall but the evidence of the relation of either virus to human disease is not recognized by all. Certain indifferent streptococci called MG frequently present in the throat of patients with viral pneumonia and less often in normal persons are also suspected as having a causal relation. Agglutinin for this streptococcus appears in the blood of about 50 per cent of patients with viral pneumonia. It is uncertain if this streptococcus is etiologically related to pneumonia or if it is only a commensal, recalling the similar controversy about the so-called influenza bacillus as the cause of influenza.

The most impressive observations in support of the viral etiology of pneumonia are the experiments by the Army Commission on Respiratory Tract Diseases. As mentioned earlier, volunteers who inhaled filtrated secretions from patients contracted pneumonia or mild nonpneumonic disease resembling in all respects the disease as it occurs naturally.

CLINICAL

The mild nonpneumonic forms are indistinguishable from the common cold, influenza, and other undifferentiated respiratory tract diseases. The chief characteristic is a nonexudative nasopharyngo-laryngo-tracheitis with a mononuclear cell reaction in the inflammed mucous membrane.

So many descriptions of the pneumonic forms have been published that only the following descriptive paragraph is needed here:

Viral pneumonia is characterized by a gradual, often ill-defined onset, a remittent or irregular fever which is seldom high; a pulse rate often relatively slow; a normal or slightly increased respiration rate; slight, indefinite or absent physical signs of pneumonia striking at variance with roentgenographic evidence of greater pulmonary invasion, a cough which is often nonproductive and paroxysmal; headache; sweating; a normal or slightly abnormal leukocyte count; a slightly increased sedimentation rate of erythrocytes, recovery by lysis and few complications. All grades of severity are encountered from the ambulatory form with clinical and roentgenographic signs of pneumonia to severe attacks with small or large areas of the lungs involved. The average duration of the febrile period is seven or eight days, but cases of weeks' duration occur. Complications are rare. The most serious ones are encephalomyelitis and circulatory failure. The mortality rate is 0.2 per cent.

DIAGNOSIS

Since the cause is unknown and because several entities probably comprise the syndrome of viral pneumonia, there are no specific diagnostic aids. Early diagnosis depends on epidemiologic and clinical aspects supported by appropriate laboratory tests and roentgenography. Roentgenographic evidence of pneumonia often precedes clinical evidence by several days. The presence of an epidemic of mild respiratory tract disease is helpful, but early diagnosis in isolated, sporadic, severe cases is not easy. A normal or slightly abnormal leukocyte count and sedimentation rate is helpful. Swab preparations from the inflamed mucous membrane usually reveal an exudate composed chiefly of mononuclear cells in contrast with the polymorphonuclear cell reaction in bacterial infections. Late in the disease and usually after it is over, the cold agglutination test and the agglutination reaction for streptococcus MG become positive in about 50 per cent of cases. The lack of response to penicillin or to sulfonamide compounds also aids in retrospective diagnosis but should not be relied upon as a diagnostic test.

Diseases most often confused with viral pneumonia are the atypical forms of pneumococcal pneumonia, coccidioidomycosis, early localized or miliary pulmonary tuberculosis, tularemic pneumonia, psittacosis and related diseases and Q fever. Each of these can be diagnosed by specific tests and the characteristics of the causative agent. Early etiologic diagnosis is of great importance because specific therapy is available for some of these infections.

TREATMENT

There is no specific form of treatment. Neither penicillin nor the sulfonamide compounds have any effect, nor should they be given prophylactically to prevent bacterial infections which so seldom occur. If the diagnosis is uncertain and pneumonia of bacterial origin is suspected, penicillin should be given promptly in adequate amounts, but discontinued if no evidence of improvement is noted within two or

three days. Pneumonia caused by the agents of the psittacosis group are apparently benefited by penicillin. Treatment is directed toward providing comfort and relieving symptoms. The most distressing symptom, cough, is best controlled by humidification of the air or spraying the dry, inflamed mucous membranes with isotonic salt solution.[3] Menthol lozenges are often comforting. Codeine in 0.06 gm. (1 grain) amounts is often needed, but for the severest attacks morphine may be needed. A cloth binder snugly fitted across the lower part of the chest and upper abdomen gives a sense of comfort. Oxygen relieves dyspnea and cyanosis.

For nasal obstruction, the application of aqueous solution of ephedrine or related compounds, or the use of inhalation of amphetamine are recommended but should be used minimally; that is, only to the point of opening the airways. Roentgen ray therapy and transfusion of blood or of convalescent serum are of no value.

QUESTIONS AND ANSWERS

MODERATOR REIMANN: A question directed to me. "What type of cardiac disease is considered of viral origin?"

A form of viral myocarditis occurs in mumps, influenza and probably in infectious mononucleosis, a disease believed to be of viral origin. A "new" virus called "encephalomyelitis" virus has been recently isolated from monkeys. Curiously, the blood of soldiers who had had an undifferentiated "three-day fever" in the Philippine Islands, neutralized the virus, suggesting to Smadel that the same virus caused the disease.

MODERATOR REIMANN: "Do you consider aminophyllino of therapeutic value in pneumonia?"

I have never used it in pneumonia and cannot see what benefit it would cause, except to relax a spastic bronchus, if bronchial spasm can ever be detected during pneumonia. The questioner adds that it may reduce bronchiospasm; perhaps it may.

QUESTION: "Please elaborate on 'cough medicines are old-fashioned.'" "What is the rationale for drugs you would substitute?"

Cough syrups are a legacy of the past, and a part of ancient folk-lore, abetted at present by habitual use, lack of logical thinking and commercial advertising. In the first place they have little or no local effect; they pass down the esophagus while inflammation is present in the nasopharynx, larynx, trachea, bronchi or lungs. They often disturb digestion. Supposed expectorants like ipecac, ammonium salts, syrup of squills and others have been shown by Boyd to have no significant expectorant action, and even if they did, what could they accomplish? They may even cause irritation and often derange the stomach by their nauseant effect.

Rational substitutes are the humidification of dry air in overheated houses in winter, or spray of plain salt solution if there is uncomfortable local dryness. Codeine in recommended dosage is valuable in controlling an exhausting or painful cough. Mentholated lozenges dissolved on the tongue are often helpful. When these simple measures fail, a spray of 0.5 per cent mono-p-chorphenol in mineral oil injected deeply into the larynx may give several hours of comfort. As a last resort, morphine may be necessary. Cough is a protective mechanism and must not be entirely suppressed. As an expectorant, the inhalation at intervals of 5 or 10 per cent carbon dioxide in oxygen stimulates the expulsion of secretions. Patients whose secretions are profuse do not need an expectorant; atropine is advised by some but its side effects may be distressing or dangerous. Judicious use of vasoconstricting drugs like amphetamine sulfate and others give temporary comfort by lessening nasal congestion and secretion.

QUESTION: "Differentiate between viral pneumonia and rheumatic pneumonia."

There is seldom any difficulty in differentiation. If a patient severely sick with rheumatic fever develops pneumonia, it is almost certainly part of that disease. While the roentgenographic and physical signs are the same as in viral pneumonia, rheumatic pneumonia is characterized by leukocytosis and a greatly increased sedimentation rate of red cells, and other evidence of rheumatic fever is present. A large percentage of patients with viral pneumonia develop a cold agglutinin in high titer in their blood, which aids in late diagnosis, and the disease often recurs in epidemics. Confusion may arise, however, in cases of severe, sporadic viral pneumonia, but the eventual course aids in diagnosis.

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Recent Advances in the Diagnosis and Prevention of Mumps and Measles*

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THE virus of measles can be transmitted to monkeys and has been cultivated in embryonated eggs,[19] but since the disease usually is not difficult to diagnose, there is no pressing need for laboratory diagnostic procedures. It was observed that prolonged passage in eggs modified the agent so that it tended to produce a milder disease in monkeys: such animals, however, later were found to be immune when inoculated with more virulent virus from humans. Intradermal injection of attenuated virus in susceptible children produced a mild type of measles in approximately 75 per cent of those tested; if the material was given by inhalation spray, almost 100 per cent developed the disease.[19] At least 50 per cent of the children who had experienced these procedures later were found to be completely resistant to induced infection or to the naturally occurring disease.[16]

Because neither the severity of the induced infection nor the completeness of the subsequent resistance is predictable, reliance for protection of persons who have known exposure to measles rests on the use of convalescent serum or of gamma globulin. Either of these products, if given during the first few days after exposure, will prevent the disease in 70 to 75 per cent of persons and will modify the severity of the illness in an additional 20 per cent.[2,13,22] The completely protected persons of course do not have a lasting immunity and may not be resistant on later exposures to the disease. Consequently the procedure is advocated only for young children or for anyone when it is inadvisable to permit them to contract the infection.

What has been said about measles will serve as a background for a discussion of German measles. Much attention is now given to this disease since the recognition of the danger of congenital defects appearing in children of mothers who have rubella during the first three months of pregnancy.[3,18,21,24] The principal defects are cataracts, deafness, cardiac and dental [8] abnormalities.

Most of the cases have been reported from Australia. From the surveys made it is estimated that defects will occur in 100 per cent of children born of mothers who had rubella during the first two months and in 50 per cent of those whose mothers had the disease in the third month of pregnancy. However, there was only one abnormal child born of five women who had rubella in the first two months of pregnancy according to a survey made in Milwaukee.[10] That rubella is not unique among virus diseases in its ability to produce congenital abnormalities is suggested by a recent report which incriminates the viruses of measles, mumps, varicella and herpes zoster.[24]

Whether or not only certain, perhaps mutant strains of virus are involved in the phenomena mentioned is not known. In any event it would be highly desirable to have laboratory tests that would establish the diagnosis of rubella and possibly permit comparison of various strains of the virus. Unfortunately this is not yet possible. The virus has been transmitted to rhesus monkeys by injection of nasal washings and blood from patients; the agent also can be grown in embryonated eggs. Attempts to demonstrate immunity in monkeys that have recovered from the infection gave irregular results.[11]

Of the methods suggested to manage the problem of rubella in pregnancy—(a) expose all girls before puberty to the disease, (b) attempt to develop a vaccine, (c) evaluate use of immune sera in prevention of rubella, (d) consider termination of pregnancy in persons known to have contracted the disease during the first three months after conception—only the use of a vaccine would seem to offer at present a potentially satisfactory solution. The very considerable difficulty that may obtain in making a clinical diagnosis of rubella in adults would seem to exclude abortion as a workable procedure apart from any evaluation on the basis of data yet available of the actual risk of the child being defective or apart from the moral and legal bases of justification for abortion because of risk to the child alone. The occurrence of atypical infections, as was shown by isolation of virus from a child with fever, malaise, slight rhinitis, posterior lymphadenopathy but no rash,[11] precludes reliance on any procedures such as prepubertal exposure, passive immunization or abortion because these are all dependent on establishment of a definite diagnosis. Since the virus can be grown in eggs, a vaccine probably could be readily prepared. Even if use of such a preparation resulted in the production of regular rubella, the desired result would be achieved unless an appreciable proportion of persons are susceptible to second attacks of the disease.

Mumps, unlike measles, is a childhood disease that is liable to have more severe complications when contracted by an adult. The occurrence of orchitis and of meningo-encephalitis emphasizes the desirability of prevention or modification of the disease

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under controlled conditions. The case of mumps meningitis or meningo-encephalitis without parotitis may be a difficult diagnostic problem to be differentiated from other types of aseptic meningitis, and especially from poliomyelitis. Specific diagnostic procedures are needed for this purpose. Recent developments indicate that we may well achieve both of these objectives.

Mumps has been transmitted to rhesus monkeys by direct injection of saliva from the patient into Stensen's duct of the parotid gland.[4,9,14] The virus also can be passed in embryonated eggs.[12] Parotid glands from infected monkeys as well as chick embryo membranes containing virus can be used to prepare antigens for a diagnostic complement-fixation test. In many instances antibodies can be detected by this method in the sera of persons with mumps within five days after onset of symptoms. Two-thirds of such persons will develop specific antibodies by the end of the first week and 90 per cent by the end of the second week.[5] Persons with mumps meningo-encephalitis with or without salivary gland involvement also develop these antibodies. Virus sometimes may be directly isolated from cerebrospinal fluid by inoculation into monkeys.[25] The rapid development of antibodies should make possible a laboratory diagnosis during the acute phase of illness something that is not possible for most virus diseases. Another test is available that is easier to perform than the complement-fixation procedure. It is based on the capacity of mumps virus to be absorbed onto red blood cells; much of the virus is then eluted from the cells but the latter are sensitized so as to be specifically agglutinated when mixed with convalescent or immune sera. Human red blood cells are used for the test.[1]

One additional method for diagnosis has been used. Convalescent persons develop a skin reaction to heat inactivated virus injected intradermally. This reaction may be elicited in from a week to several months after onset of the disease and may persist for months or years. It may appear after subclinical infections[5] and is considered more sensitive as an indicator of past infection than the complement-fixation test. Thus 80 per cent of adults with a history of mumps had positive skin tests, while in adults with no history of mumps, 60 per cent had positive skin test reaction. In the latter group 40 per cent had positive complement-fixation tests. Subclinical infection accounts for one-third of cases of past infection as judged by skin tests.[6,17]

The use of convalescent serum in the prevention of mumps is an established procedure. However, the prevention of complications by serum therapy has given variable results. In one series of cases[20] the incidence of orchitis but not of encephalitis was reduced by this method. An effective method of active immunization should prove more useful.

After demonstration that some 60 per cent of monkeys could be immunized by injection of two doses of monkey parotid tissue containing virus inactivated by formalin,[4] studies were made of the effects in humans.[7] Forty-one children were given two to three doses of vaccine subcutaneously at intervals of five days. Approximately two weeks after the first injection they were tested for immunity along with a group of 32 unvaccinated control children. Approximately 50 per cent of the immunized children had increased resistance on the basis of comparison of reactions with those observed in the control group. This is an encouraging result when consideration is given to the severity of the challenge inoculation (which was made by direct injection into Stensen's duct or by an oral spray of infective material) and to the short interval between vaccination and the test of immunity. A small number of persons who received vaccine following natural exposure to mumps were not protected from the disease. This likewise is a severe test of an immunizing agent in an illness with an incubation period as short as that observed for mumps—usually two to three weeks.

A more promising material to use as a vaccine has been produced from infected amniotic membranes of chick embryos. After 25 serial passages in eggs, the virus had lost its capacity to produce typical parotitis when injected into Stensen's duct of monkeys, but it immunized them against subsequent challenge inoculation with virulent monkey-passaged virus six to fourteen weeks later. Preliminary tests suggest that the egg material also is attenuated for humans.[7] Many more tests will be necessary but the prospects seem good that before long there may be available an immunizing agent against mumps.

QUESTIONS AND ANSWERS

DR. REIMANN: Dr. Pearson, how many times can a person have German measles?

DR. PEARSON: The answer is based largely on what was mentioned in the paper, that the diagnosis of German measles is a clinical impression. In childhood the common occurrence of exanthem subitum leads to confusion in diagnosis. Many children who have had German measles also have regular measles. In addition they may have rashes and various types of reactions, so that we do not know how many times a person has had German measles, particularly since the incidence of subclinical infections without rash is unknown.

DR. REIMANN: Dr. Pearson, is there a mumps vaccine under preparation commercially now?

DR. PEARSON: As far as I am aware, this vaccine is still strictly on an experimental basis, and is not available from any commercial house for regular use.

DR. REIMANN: Dr. Pearson, can rubella occurring in a woman six weeks prior to conception cause congenital defects?

DR. PEARSON: That is a little difficult to answer. Presumably not. The effect on the foetus is thought to occur during the early stages of development of the embryo, particularly during the first few weeks. Infection of the mother before conception should not affect the foetus.

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Influenza — A Review of Recent Developments*

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THE two influenzas of known etiology are generally mild diseases caused by viruses designated types A and B. These two infectious agents, although immunologically distinct, are practically identical in the main features of their pathogenic action in man and experimental animals. While most of the recent extensive epidemics of influenza can be traced to one or the other of the two known viruses, there are several other diseases of unknown etiology which closely resemble influenza and which occur either sporadically or in local outbreaks.

EPIDEMIOLOGY

The data accumulated by many laboratory workers in various parts of the world give us interesting information on the periodicity of epidemics of influenza A and B and on the seasonal and geographical distribution of these diseases. In the past 14 years there have been four major epidemics of influenza A of world-wide distribution spaced at intervals of four, four, and three years, the last one occurring in the winter of 1943-44. Since February, 1947, influenza A has again been prevalent in the United States for the first time in three years, but the extent of the present epidemic is not yet known. Between 1936 and 1946 there have been three epidemics of influenza B spaced at intervals of four and six years. Interspersed between these major prevalences there have been minor or localized outbreaks of both type A and B influenza.

A summary of the present status of our knowledge of the geographical and seasonal distribution of influenza based on the available published reports since 1932 is presented in Tables 1 and 2. Large outbreaks are represented by capital letters A or B and minor prevalences by small letters. The time of year at which the peak incidence occurred is indicated by the position of the letters beginning with the first quarter of the year at the left of the space between two vertical lines. This data is, of course, fragmentary, but it serves to illustrate several points. Influenza virus type A was originally found in England during the winter epidemic of 1933. An epidemic of type A influenza in the Western United States was identified for the first time in 1937, or four years later, as part of a general occurrence of the disease in the United States and England. A minor prevalence of influenza A was found in the winter of 1934-35, or midway between the two epidemics. This 1934-35 outbreak was preceded by a sharp epidemic in Puerto Rico in the summer of 1934 and followed by an outbreak in Australia in the latter part of 1935.

As may be seen in Table 2, influenza A was found in California or other parts of the West in the winters of 1938-39, 1940-41, and 1943-44. Influenza B occurred in the winter of 1939-40, and 1945-46. In all instances influenza was found at about the same time in other parts of the United States. It is interesting to note that three of our major epidemics were preceded by sharp summer or autumn outbreaks of influenza in the Caribbean Islands or Hawaii. Another point of interest is that in 1943 and 1945 sporadic influenza was found in the United States in the spring or summer months preceding an early winter epidemic of the same type.[6] Thus a continuous low prevalence of influenza may occur for many months before the epidemic upsurge of the disease is set off by the coming of winter.

The factors affecting the periodicity and the incidence of influenza are by no means thoroughly understood and it is not yet possible to predict epidemics with any accuracy. There is, however, some evidence of world-cycles of the disease. As the virus travels from one populated area to another the ap-

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† From the California State Department of Public Health.

Table 1.—*Influenza According to Year, Season, and Geographic Location 1932-38*

	1932	1933	1934	1935	1936	1937	1938
Caribbean	?		A		?		
U. S. East	?			a	B	A	
U. S. West	?			○	B	A	
England		A		a	*	A+	
Australia				A			b?

A or B represent epidemics of specific type; a or b localized outbreaks or sporadic cases; the question mark (?) epidemics of undetermined etiology. Position of letters between two lines indicates time of year, winter being at the left of each space.

* A in Russia. + A also in Hungary. ○ A in Alaska.

pearance and decline of epidemics occurs in succession as indicated in Table 2. The incidence of the disease at a given time and place may be determined in part by the relative immunity of the population, and this in turn depends on the length of time since the previous epidemic caused an increase in the proportion of immune persons. In the temperate zone the season is also an important factor. For some unknown reason influenza virus does not spread easily in the spring or summer even though the occurrence of an epidemic the following winter may prove the average immunity of the population to have been low.

PATHOGENESIS

The influenza virus has a specific affinity for the columnar epithelium of the respiratory tract. The local nature of the infection has been demonstrated conclusively in experimental animals and there is no reason to believe that the infectious process in man, which occurs for the most part in the trachea and bronchial tree, differs essentially. Virus inhaled in the form of droplet nuclei sticks to the columnar epithelium and reaches the interior of the cells, where it multiplies. The result is necrosis of the infected cells accompanied by a local inflammatory process, submucous mononuclear infiltration, and purulent exudate in the respiratory passages. Recovery takes place with regeneration of the damaged epithelium first in a stratified squamous form which later returns to the columnar type.

It is evident from the nature of the infection in influenza that the virus in the respiratory epithelium is relatively inaccessible to circulating antibodies or to any potential chemotherapeutic agent carried through the bloodstream. It has been found, however, that virucidal substances do exist in the nasal secretions and probably also in secretions of the trachea. These secreted antiviral bodies, when present in sufficient concentration, presumably protect the respiratory surfaces from infection by air-borne virus and tend to limit the spread of an infection. Their concentration in the nasal secretions is roughly related to the titer of circulating antibodies.

No satisfactory explanation has been found for the marked constitutional symptoms, leukopenia, and occasional damage to organs other than those of the respiratory tract in influenza. These manifestations seem to be toxic in nature and this hypothesis is supported by the observation that large doses of inactive virus inoculated subcutaneously will give rise to the constitutional symptoms of influenza. The toxin may also be responsible for the damage to the myocardium observed in fulminating influenza.[5]

The toxic nature of influenza virus has been demonstrated recently in the laboratory. Large doses given to mice and other animals by the intracerebral route cause acute toxic deaths in 24 to 72 hours without significant multiplication of the virus. Intravenous or intraperitoneal injection of massive doses produced death in 8 to 96 hours with widespread necrosis of the liver and spleen, hemorrhage into the intestine, and pleural exudation.[8] Various strains of influenza virus differ in their toxicity. The toxic effect is specifically neutralizable by immune sera, and mice can be immunized against it by subcutaneous or intraperitoneal vaccination. Influenza virus inoculated into the anterior chamber of the eyes of rabbits produces severe corneal damage without multiplication of the virus.[4] These observations on the influenzal toxin suggest possible new approaches to the problems of vaccination and therapy.

IMMUNIZATION

For active immunization against influenza, two methods, differing in principle, have been proposed. One method involving the inhalation of attenuated active virus[2] has not yet found wide application. It is probably difficult to produce solid immunity by this method without causing a mild attack of influ-

TABLE 2.—*Influenza According to Year, Season, and Geographic Location 1939-46*

	1939	1940	1941	1942	1943	1944	1945	1946
Argentina†		A	b	a	A	b	b	
Caribbean		A b					b	
Hawaii		A b			?		B‡	
U. S. East	a b B	b	A+ b		b a○ A		b b B a	
U. S. West	a	B A			a A		b b B	
England	b a*	?	a		b a A			B
Australia	A	a		A	a b		b B a	

+ A also in Canada.
○ a and b also in Canada.
‡ b also in Western Pacific Islands.
* A also in Hungary.

† The data on influenza in Argentina was kindly furnished by Dr. R. M. Taylor, International Health Division of The Rockefeller Foundation.

enza, and the danger in spread, with resulting enhanced virulence of the virus, must also be considered. Advantages of the intranasal method appear to be economy in time and materials, and the possible production of a local or cellular immunity which is not to be expected from other methods.

Subcutaneous inoculation of concentrated partially purified inactive influenza virus (a mixture of A and B) is the current method of choice in the United States. This procedure is essentially an artificial stimulus to the production of circulating antiviral antibodies. It cannot be said with certainty that the humoral antibody is the only factor conditioning resistance to influenza, but a rough correlation between antibody titer and severity of infection is now generally accepted.[3,6,9,11] There are, probably, also anatomical or physiological components in the respiratory tract which affect secretion of antibody onto the mucous membranes, and determine its availability to infected tissues.

Influenza vaccine is now prepared from the allantoic fluid of infected chick embryos. The virus is usually concentrated 5 to 10-fold by ultra-centrifugation, by adsorption on and elution from erythrocytes, or by adsorption on calcium phosphate. It is inactivated by treatment with formaldehyde. Subcutaneous inoculation of 1 cc. of this material is generally used for immunization, but intradermal inoculation of 0.1 cc. has recently been proposed.[12] When the standard method of immunization against influenza is used, mild systemic reactions with malaise and fever may be expected in 10 to 20 per cent of those inoculated. The intradermal inoculation of ordinary vaccine or subcutaneous inoculation of calcium phosphate precipitated virus have been suggested as means of reducing these reactions while at the same time attaining post-vaccination antibody titers equal to those from the usual method.

Practically all virus vaccines are made from chick embryo material and the possible dangers of allergic or anaphylactic reactions must be considered. With increasing and repeated use of these vaccines, sensitization of a proportion of the population to one or more of the constituents of eggs may well result. Although virus vaccines may usually be given to egg-sensitive individuals without unfavorable results, the possible disadvantages of producing sensitization must be balanced against the advantages of having the immunity.

The indications for the use of influenza vaccine have not yet been clearly defined. During the past year the usual practice has been to wait for the first cases of influenza to appear before giving the vaccine. As influenza often appears suddenly in several widely separated places, and spreads rapidly, it may not be possible to produce an effective immunity before the peak of the epidemic is reached. An alternative plan is to give the vaccine during the autumn because the most probable months for an influenza epidemic are December or January. This plan may also prove inefficient if the epidemic appears in February or March, as it did this year, because the immunity probably will have decreased appreciably in the three or four months after vaccination.

The results of the largest and most conclusive experiment on vaccination against influenza A, that of the Army Influenza Commission,[3] are summarized in Table 3. In the various groups under study, the peak of the epidemic of influenza A was reached one to six weeks after the completion of vaccination. The criteria for estimating incidence were somewhat variable, but generally the diagnosis was based on clinical findings and a temperature over 100° F. It will be seen that the ratio of the incidence in the control group to that in the vaccinated group varied from almost 7 to 1 at Rutgers to less than 2 to 1 at the University of California. These differences in the degree of protection cannot be attributed solely to variations in the methods of collecting data used by the several investigators. In our opinion no adequate explanation has yet been found, but this does not invalidate the conclusion that influenza vaccine produces a relative, but not an absolute, immunity when given two to six weeks before exposure.

TABLE 3.—*Summary of Vaccination Experiment in ASTU During 1943 Epidemic of Type A Influenza*[3]

University	Vaccinated		Controls	
	No.	Incidence	No.	Incidence
Rutgers	606	1.0	606	6.9
Princeton	590	2.9	560	8.5
C. C., N. Y.	1,050	1.7	1,055	8.3
Cornell	1,474	4.3	1,461	10.0
Michigan	878	2.3	875	8.6
Iowa	599	1.3	599	6.5
Minnesota	599	2.7	607	9.0
California*	457	3.9	435	5.9
	6,253		6,198	

* Incidence based on serological diagnosis of influenza A.

The results of other influenza vaccination experiments in California are summarized in Table 4. During the epidemic of influenza A in 1940-41 a crude, unconcentrated vaccine was given about two weeks before the peak of the outbreak. The results indicated a slightly better degree of protection than that obtained in the 1943-44 epidemic (Table 3) when the interval between vaccination and infection averaged about nine weeks. In 1942 a small group was inoculated with concentrated vaccine obtained from Dr. Hirst.[9] This preparation was concentrated by a method different from the ones now in use. One year later a portion of this group was studied during the influenza A epidemic and evidence of protection by the vaccine was obtained as shown in the last line of Table 4.[10] This result confirms the observation of

TABLE 4.—*Results of Influenza Vaccination in San Francisco*[1,10]

Year	School	Vaccinated		Controls	
		No.	Incidence	No.	Incidence
1940-41	U.C.	273	13-15%	1,213	25-43%
1943-44	U.C.-Stan.	110	17%	93	40%

other investigators[9] that some immunity to influenza may persist for as long as one year after vaccination, but the degree of this immunity is less than that observed at two to four weeks.

The reports from Dr. Francis' group at the University of Michigan on vaccination against influenza B are somewhat more favorable. These are presented in Table 5. The first study was done with persons vaccinated subcutaneously and then infected by nasal spray four weeks to four months later.[11] The result indicated a reduction in attack rate of 75 per cent. No significant difference was found between the groups receiving vaccine at four weeks and those receiving it four months before infection. Subsequent observations in a larger but less well controlled study[6] during the last influenza B epidemic showed a ratio of incidence in controls to vaccinated of 9 to 1. There is other evidence that vaccination against influenza B may be more effective than for type A.

TABLE 5.—*Vaccination Against Influenza B*

		Vaccinated		Controls	
Year	Place	No.	Incidence	No.	Incidence
1943*	Mich. State Hosp.	69	10%	27	41%
1945-46†	Univ. of Mich.	600	1.2%	1,100	9.9%

* Induced infections 4 weeks to 4½ months after vaccination.[11]

† Natural infections during influenza B epidemic.[6]

One problem in immunization against influenza results from the differences in antigenic composition of various strains within the type-groups A and B. The possible importance of these strain differences was indicated in the vaccination study conducted by the Army Influenza Commission[3] during the influenza A epidemic of 1943-44, but it was much less evident in the results of Francis and his associates[6] with vaccination against influenza B in 1945-46.

THERAPY

No effective therapy either by serum or by drug has yet been found for infections with the influenza virus itself. It is well known, however, that influenza, because of the damage it does to the ciliated respiratory epithelium, predisposes to secondary bacterial infection. A large proportion of the so-called influenzal pneumonias are really bacterial, but in some a synergism of bacterium and virus may exist.

A recent experimental analysis of combined viral and bacterial pneumonia produced by influenza virus and streptococci or pneumococci in rats and mice has shown that the double infection is more severe than that with either virus or bacterium alone.[7] The results of treatment with sulfapyridine or sulfamerazine indicated that the potentiating effect of the viral infection did not interfere with effective chemotherapy of the bacterial infection. In influenzal pneumonia under chemotherapy the prognosis may depend largely, if not entirely, on the severity of the viral infection. The acute fulminating variety of influenzal pneumonia responds least well to chemotherapy. Other factors such as leukocytic response, edema fluid in the lungs, and toxigenic properties of the infecting strain of virus, may affect the outcome.

The synergistic or secondary bacterial component in human influenzal pneumonia may be streptococcus, pneumococcus, staphylococcus, or Hemophilus influenzae. The latter organism is more sensitive to streptomycin than to sulfonamides or penicillin so that the choice of drug would depend on what bacteria are predominant in the sputum.

SUMMARY

Our knowledge of the epidemiology of influenza is increasing rapidly with more extensive laboratory diagnosis of the disease. The pathogenesis of influenza involves a local infection in the respiratory tract and a toxic factor which may cause some of the systemic effects.

Immunization against influenza by subcutaneous inoculation of inactive virus reduces the incidence and severity of the disease, but the immunity is temporary. There is additional evidence for the effectiveness of chemotherapy of the bacterial, but not the viral, component of influenzal pneumonia.

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QUESTIONS AND ANSWERS AND DISCUSSION

MODERATOR REIMANN: I should like to ask Dr. Eaton what he thinks about the possibility of the next epidemic of influenza. The next year, you know, is 1948, and the doctors all promised us in 1918 a pandemic of influenza in the next 30 years.

Will there or will there not be a pandemic on time?

DR. EATON: As I said in the paper, it is practically impossible to predict these epidemics of influenza, and I certainly wouldn't want to make a prediction as to when the next large pandemic such as that of 1918 will occur.

MODERATOR REIMANN: The next question. If influenza as a vaccine gives a reaction in 50 per cent of patients, and if the reaction is sometimes worse than the disease itself, is there much point in using vaccine? Second: How much danger is there in the allergy to eggs of patients who receive influenza vaccine made out of an egg medium? Third—and this is something which I don't think Dr. Eaton has heard yet, because I attended a meeting last week in Philadelphia, and heard the report of an experience with vaccine at the Lawrenceville School in New Jersey. In that school, a very large one, all the boys had been vaccinated against influenza, and apparently adequately. Within six weeks after that—I believe it was—a severe outbreak of influenza took place. Subsequent studies showed that enough protection was not given by the vaccine. If this is true, how much more possibility is there of different immunological strains of virus which will not be protected against by the use of vaccines which are available at the present moment?

Those are the three questions.

DR. EATON: In regard to the first question, as to the reactions: I think 50 per cent is rather a high figure, but it is undoubtedly true that in some individuals the reaction to the vaccine is as bad as having an attack of influenza. In the case of a severe epidemic of Type A or Type B influenza—of course, in which the clinical illness is very much more severe than we usually see—this might not be an important consideration.

As I said, there are possibly other ways of avoiding these reactions, for instance, by intradermal inoculation of the vaccine, which seems to produce as good an antibody response as the subcutaneous vaccination, but we don't know yet how well that method protects against influenza.

The question of the different strains of influenza virus, I think, has certainly not been worked out to anybody's satisfaction as yet. I think it is quite possible that we might have an epidemic with a strain that is so remotely related to those now being used in the vaccine, that we will observe very little protection.

The differences I showed you with the various groups in the Army Influenza Commission may be due in part to differences in the strains of virus that appear in various parts of the country.

Apparently the influenza virus, in traveling from one part of the world to another, does not necessarily retain the same antigenic composition. It may be different in California than it is in New York.

Moderator Reimann: Dr. Eaton, should the same method for intradermal testing be used in influenza vaccination as in testing for diphtheria antitoxin?

Dr. Eaton: No intradermal test to determine a patient's immunity to influenza is available.

Moderator Reimann: Dr. Eaton, should we vaccinate every few weeks all winter for influenza?

Dr. Eaton: That would be a rather expensive proceeding under present circumstances. I think not more than one, or at the most two, doses of vaccine a year would be justified.

Moderator Reimann: That answers the first part of another question, but the second part of it is: "What is a good tonic after influenza? Desoxycorticosterone acetate?" (Laughter)

Moderator Reimann: Another question: "Aside from the admitted value of continuing experimental studies, do you believe that influenza vaccine is indicated as a preventive procedure when one balances the effectiveness of the virus against the likelihood of type and strain of specific organisms and the occurrence of reactions from the vaccine?"

Dr. Eaton: Apparently whoever asked that question wants me to commit myself as to whether or not I am for or against influenza vaccine.

I think the evidence certainly indicates that there is some protection against influenza, and I don't think that we can make any definite decision one way or the other, especially as far as the doctor in private practice is concerned.

There was one question about the danger of allergic reactions that I forgot to answer before.

During 1945 about 6,000,000 people in the Army were vaccinated with the influenza vaccine by giving one cc. subcutaneously and I think there was only one death in that group. There were allergic reactions in about 1 per cent of the people receiving vaccine, and a large number of those people gave a history of allergy, either to eggs, or something else.

Moderator Reimann: It would simply duplicate matters to test everybody intradermally first before giving the vaccine, would it? It would cause a lot of duplication and expense.

Dr. Eaton: That could be done, of course. You might at the same time produce a little immunity by giving a tenth of a cc. intradermally, but then there is the possibility of getting an allergic reaction from the intradermal inoculation of the vaccine.

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Viral Studies on the Etiology of Epidemic Diarrhea of the Newborn*

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IT is the purpose of this communication to present experimental data aimed at establishing a viral etiology for a disease of the gastro-intestinal tract which, for want of a better name, we will call Epidemic Diarrhea of the Newborn.

This has been a common disease in California during the past year. In the northern part of the state since last summer we have received material for study from five hospital outbreaks representing some 256 cases. Forty-nine of these were fatal. Eleven deaths occurred among 24 premature infants affected in one hospital. The true incidence is certainly much higher. Outbreaks have been reported from all parts of the state. It is clear that we are dealing with a serious problem.

There have been, in the past, many efforts to establish the etiology of the disease, or, perhaps it is better to say, the group of diseases included under this heading. In some outbreaks it has been possible to make a case for one or another of the bacteria which are known to cause enteric disease, but most of the bacterial studies have been essentially negative. For this reason attempts have been and are being made to prove a viral etiology. Two reports presenting evidence that the disease was caused by a virus should be mentioned. The first method, described by Buddingh and Dodd,[1] utilized the rabbit's cornea as a method for virus isolation and passage. Buddingh further claims[2] to have demonstrated that neutralizing antibody appears in the convalescent sera of patients, thus establishing a strong argument that the virus isolated was the cause of the disease. The second method, described by Light and Hodes,[3] used newborn calves. To my knowledge, neither piece of work has been fully confirmed.

Our own investigations have been carried on as a joint enterprise of the Virus Laboratory‡ of the California State Department of Public Health and the Infectious Disease Laboratory§ at San Francisco Hospital. They have been directed toward attempting to use the method of Buddingh and Dodd with material from several California outbreaks and, to a lesser extent, to discovering other methods of isolating and propagating a virus or viruses and to proving that they cause the disease. The work is far from completion, but the results are sufficiently interesting and the problem sufficiently urgent to warrant a preliminary report at this time.

Now, a word about the method. The only indicator which we have so far found practical for the demonstration of virus is the rabbit's eye, and this is in many respects a poor indicator. However, it is possible, with time and experience, to obtain fairly objective and reliable readings. The animals used are from six to twelve weeks of age. Under ether anesthesia their eyes are "popped," the cornea scarified with a sharp needle in a cross-hatched pattern and the test suspension, such as a rectal washing, dropped or swabbed into the eye. The results are read 24 and 48 hours later. Oftener than not nothing is seen with naked eye examination in ordinary light. When, however, the eyes are examined in a semi-dark room, using a Beebe Loupe for magnification and the beam of an ophthalmoscope for oblique illumination, it is observed that the lines of scarification have broadened and have hazy margins. Varying degrees of conjunctivitis and iritis are seen in some animals, but nowhere nearly as frequently as the corneal reaction. It is difficult to reduce the reading to objective terms and it is important that the observer be ignorant of the inoculum used in the animal under examination.

The general plan of investigation has been as follows:

(1) To show that there is an agent in the rectal and mouth washings of cases of epidemic diarrhea of the newborn which produces a corneal reaction in rabbits and that comparable material from healthy infants does not produce a similar reaction.

(2) To prove that it is a virus, first by demonstrating that it will pass a bacteria-retaining filter, and second by showing that it can be carried through serial passages.

(3) To prove, by serological means, preferably by a neutralization test, that the agent is the cause of the disease.

The results of testing material from cases and control infants are presented in Tables 1 and 2. In Table 1 the results of testing rectal washings or saline suspensions of stools collected from cases are summarized. The patients came from several different areas, the biggest group having been the one studied at San Francisco Hospital. In this group a bacterial etiology had been ruled out by six negative stool cultures. Most patients were less than three weeks of age and a fair number were premature infants. In all groups more than half of the specimens tested

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† From the California State Department of Public Health. Dr. Henry Bruyn and Dr. Henry Brainerd have collaborated in the studies on which this report is based.

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§ Jointly sponsored by the Division of Medicine and Pediatrics of the University of California Medical School, the Department of Public Health of the City and County of San Francisco, and the George Williams Hooper Foundation for Medical Research.

TABLE 1. *Corneal Scarification with Rectal Washings from Cases of Diarrhea of the Newborn*

Origin	Positive	Negative	Total
San Francisco	19	5	24
Vallejo	4	1	5
Sacramento	4	0	4
Fresno	4	0	4
San Diego	3	0	3
Oakland	3	2	5
Total	37	8	45

82 per cent Positive

were positive and the overall figure is 37 positive out of 45 tested, or 82 per cent.

These results were then compared with those obtained with similar material collected from healthy infants at the University of California and San Francisco Hospitals. These data are summarized in Table 2. In contrast to the cases, only five of thirty-five were positive, an incidence of about 15 per cent. The difference between cases and controls is considerable.

TABLE 2.—*Comparison of Results in Cases and Normal Infants*

	Positive	Negative	Total	% Positive
Cases	37	8	45	82
Normal Infants	5	30	35	14

It was next shown that, with 11 of 13 positive specimens tested, the substance responsible for the keratitis passed through a collodion membrane with an A.P.D. of about 450 mm. and, furthermore, that it was destroyed by heating at 60° for 30 minutes. Passage has been carried out serially at 48-hour intervals in rabbit corneas, as Buddingh described. In addition, passages have been made in the yolk sac of the chick embryo. In all, four strains have been passed in chick embryos and with each the yolk sac and umbilical stalk and viscera have retained the property of causing keratitis. One strain, Lee, has been through 15 passages. Control passages, carried on in parallel with non-infected material, have been consistently negative. Unfortunately the titer of the material in eggs, as in the cornea, is low, and few embryos die, so that it is difficult to make practical use of this development. We are reasonably well-satisfied, however, that a virus has been passed by both methods.

Up to this point the work has gone well and the results obtained parallel closely those described by Buddingh. The difficult part of the investigation, however, still lies ahead—namely, to prove that the virus with which we are working is the cause of the disease. Many attempts have been made to demonstrate an increase in neutralizing antibody in the convalescent serum of patients. Some have been successful. Other attempts at neutralization have not been successful. For this reason a definite claim that the virus which causes the disease has been isolated cannot be made at present. A number of variations in technique have not been explored and other serological procedures have not yet been investigated. The overall picture is by no means discouraging.

SUMMARY

1. An agent which causes keratitis in rabbits has been demonstrated in the rectal washings of 82 per cent of 45 cases of epidemic diarrhea of the newborn.

2. The agent passes bacteria-retaining filters, can be passed in the rabbit cornea or the chick-embryo and is presumably a virus.

3. Conclusive evidence that the virus is the cause of the disease has not yet been obtained.

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QUESTIONS AND ANSWERS AND DISCUSSION

MODERATOR REIMANN: I would like to ask a question of Dr. Meiklejohn: Do you think infantile diarrhea has any relation to the type of viral dysentery which can be passed from patient to volunteer by inhaling nebulized filter viruses?

DR. MEIKLEJOHN: I am afraid I can give only a second-hand answer to that. We have been influenced a good deal, I think, by Buddingh's reasoning. The agent which I have been speaking about, as you know, is particularly virulent for premature infants, moderately so for infants in the first month or two of life, and becomes less virulent as they get older. It has been rather hard to correlate epidemics in newborn infants with epidemics of the type which Dr. Reimann describes in adults. It is true that there may be cases of diarrhea in nursery personnel, but I don't think that they fit the pattern which he has described—and for which he has made a good case—which is due to a virus. I would suspect it to be another agent.

MODERATOR REIMANN: The next question I would like to ask Dr. Meiklejohn is:

During any of these epidemics you have studied in infants, have adults had a similar disease at the same time?

DR. MEIKLEJOHN: Yes, they have, and we have tested materials from several of these adults, and obtained results similar to those we have obtained in children. However, we do not know whether they are actually suffering from an active infection with this agent, or are simply carriers.

MODERATOR REIMANN: Dr. Pearson?

DR. PEARSON: The first question that comes to my mind on that score, I would say, would be a possible relationship to herpes. I would like to answer a question that has been directed to me, "The association of virus enteritis with upper respiratory virus infections—is it a recent clinical entity?"

Those who have reported the incidence of diarrhea and other gastro-intestinal complaints in these mild infections of the respiratory tract have reported diarrhea and vomiting in 25 per cent of the febrile catarrhs.

In the British group I noticed it in 10 per cent of the febrile catarrhs, and it occurs in 11 per cent of influenza.

The disease, of course, predominates clinically in the respiratory tract, and a small percentage of patients have gastro-intestinal symptoms from time to time, which I think is different from the disease I mentioned just a moment ago when I asked a question of Dr. Meiklejohn.

In this disease, which I call viral dysentery, 90 per cent or 80 per cent of the attacks in various patients are characterized predominantly by nausea, vomiting and diarrhea; and respiratory tract symptoms were noticed in only 20 per cent, which suggests to my mind that they are different entities, there being a minimum number of gastro-intestinal symptoms in a respiratory tract disease, and the opposite would

be the minimum number of respiratory symptoms in a disease of the intestinal tract.

The Danish and British think that this adult form of diarrhea is really an encephalitis or an infection of the central nervous system, and that the intestinal tract symptoms are mediated through the control of the gastro-intestinal tract. There is no evidence that there is any blood, pus, or mucous in the stools.

DR. MEIKLEJOHN: About the question of this virus being a form of herpes simplex, naturally, I think that is the first thought that one would have. At least, there has been emphasis lately on the variety of types of herpes isolated from human cases. No one is in a position to say that this is not herpes, but I would point out that the clinical reaction that you get with this agent is different than you get with herpes.

Second, this agent, to our sorrow, and despite great effort, has shown absolutely no neurotropic properties, and if it is herpes, I think we must say that it is a very atypical form.

MODERATOR REIMANN: "What treatment has proven more effective than others in the treatment of infants with diarrhea in recent epidemics?"

DR. MEIKLEJOHN: I am not too well qualified to answer that one, frankly.

MODERATOR REIMANN: This is a long question.

"To any 'virus' worker:

"In view of the fact that each active or functioning organ or apparatus requires more quantities and pressures of blood in its capillaries, and the vasodilators in its afferent arteries and arterioles are more or less wide open, that is, in cooler weather more blood goes to the respiratory tract to warm the inspired blood and in the cerebro-spinal axis, not in communication with the exterior, in active play or work there is an increase in blood in the capillaries of its motor neurons, or children may take irritating foods or excess foods into the digestive tract, or puberty in developing boys will draw more blood to the parotids and testes and if they are exercising and there is more blood due to sweating, will not a skin chill congest and inflame, and cause it to remain sterile, and will not counterirritation of the skin bring the blood back to the skin and relieve the congestion and inflammation in any of the above organs or symptoms?"

Can any of you gentlemen answer that?

DR. PEARSON: The question, as I see it, essentially concerns reflex action in regard to circulation. If that were essentially true, we might expect that the application of a mustard plaster might have some beneficial effect upon atypical pneumonia.

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Symptoms of Acute Pancreatitis*

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RECENTLY, we presented [4] a statistical review of 307 established cases of acute pancreatitis. The principal objective of this article is the explanation of the pathogenesis of acute pancreatitis. A deficiency exists in the literature relative to this subject.

The following explanation for the development of the various signs and symptoms of acute pancreatitis includes clinical impressions. For the greater part, the conclusions reached are substantiated by experiments and the clinical correlation of the conditions observed at autopsy. Of the 307 patients studied, 102 died. Eighty-five (83.9 per cent) of these were examined post mortem. An attempt will be made on this basis to correlate the symptoms and physical findings of the disease with the pathology.

PAIN

The response to be expected from pancreatic disease is largely determined by its anatomical location. The cardinal symptoms of acute pancreatitis are pain and nausea with vomiting. The type of initial pain is dependent on the severity of the disease. In the milder types of acute pancreatitis, the initial symptom is pain originating in the epigastrium. During the first few hours, the pain is steady in character—then it becomes intermittent, rhythmic, and cramp-like.

Later, the pain loses its rhythmicity and again becomes steady. At this time, generalized abdominal pain replaces the epigastric pain. The initial, steady, aching pain probably is due to the involvement of the pancreas by edema and early necrosis. This produces pancreatic distention with pressure on the capsule and the surrounding structures.

As the process extends to adjacent portions of the pancreas, other pathological changes begin to manifest themselves. There is a retroperitoneal extravasation of blood-tinged pancreatic fluid in all directions. The superior extension irritates the nerve plexus around the celiac axis. The extension inferiorly produces the same changes in the adjacent superior mesenteric vessels and their accompanying nerve plexuses. Irritation of the nerves produces hyperperistalsis of the stomach and small intestine. This accounts for the development of the intermittent, rhythmic, cramp-like pain. Clinical examination then reveals the presence of true intestinal colic—cramp-like abdominal pain occurring with an audible wave of small intestinal peristalsis.

As the necrosis continues, the pancreatic fluid progresses anteriorly through the posterior parietal peritoneum either by a frank rupture or extravasation. The leak into the lesser peritoneal sac may occur early and produce enough fibrinous exudate to close the foramen of Winslow. If this closes, the fluid remains localized in the lesser peritoneal cavity. If closure of the foramen of Winslow does not occur, bloody fluid spills into the greater peritoneal cavity producing a chemical peritonitis. This causes an adynamic or inhibitive type of ileus with a gradual loss and final disappearance of the hyperperistalsis. The out-pouring of the bloody fluid into the greater peritoneal cavity accounts for the subsequent shift of pain and tenderness from the upper to the lower part of the abdomen.

The continued spread of the bloody fluid retroperitoneally produces the flank tenderness which is one of the most important physical findings in the diagnosis of acute pancreatitis. This also explains the occasional development of the brownish discoloration below the ribs posteriorly and the flank ecchymosis (Grey-Turner Sign [5]). Further anterior extravasation of the bloody fluid in the extraperitoneal space may result in bluish discoloration or ecchymosis of the umbilicus (Cullen's Sign [1,6]).

In patients whose pain is located in the epigastrium or in the right upper quadrant, the necrotic process is observed to be principally in the head of the pancreas. Retroperitoneal necrosis and extravasation of the blood-tinged fluid is observed in those patients who have epigastric pain radiating through to the back. A small number of patients with acute pancreatitis simulate acute coronary occlusion with the predominant pain located substernally or in the precordium. At autopsy, the greater degree of pancreatic necrosis is observed in the tail of the pancreas. The necrosis extends high under the rib cage. In three cases, the fat necrosis even involved the left pleura and the pericardium. The nerve pathways for referred pancreatic pain to the left chest wall have been described by Dinsmore and Nosik.[2] The occasional cases of acute pancreatitis with left-shoulder-tip pain have necrosis in the tail of the pancreas. However, free intraperitoneal fluid can produce shoulder-tip pain by irritation of the phrenic nerve endings in the diaphragm. Apparently, the pancreatic enzymes have no effect on the nerve sheaths. We have several pathological specimens with complete pancreatic destruction in which the nerves passing through and adjacent to the pancreas are laid bare with no evident destruction.

As the hemorrhagic necrosis continues, the extravasation of bloody fluid may extend into the root of the mesentery of the transverse colon. This is probably the cause of the selective type of ileus seen frequently in acute pancreatitis. The transverse colon

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is most often affected. In any patient with this type of ileus and acute abdominal symptoms, the diagnosis of acute pancreatitis should be considered.

NAUSEA AND VOMITING

The early, severe nausea and vomiting is reflex in origin. After the development of the inhibitive ileus, the vomiting is secondary to the ileus. Vomiting later may be due to actual mechanical obstruction of the stomach or duodenum by an enlarging pancreas. The enlargement of the pancreas is caused by: (1) edema, (2) hemorrhagic extravasation, (3) pseudocyst, or (4) abscess.

DIARRHEA

Diarrhea may be a misleading symptom in the differential diagnosis of acute pancreatitis. It is not particularly uncommon, however. The diarrhea can be explained on the basis of colonic hypermotility. The root of the transverse mesocolon arises in close proximity to the pancreas. A large inflammatory mass often is found between the layers of the transverse mesocolon. The absence of pancreatic enzymes in the intestinal tract also may contribute to the production of the diarrhea.

GASTRO-INTESTINAL HEMORRHAGE

A symptom of acute pancreatitis which is present but not adequately described in the literature is gastro-intestinal hemorrhage. This is manifested most commonly as a bloody diarrhea or hematemesis. It is observed at autopsy that those patients who die of acute pancreatic necrosis with gastro-intestinal hemorrhages have numerous areas of hemorrhagic ulceration in the mucosa of the gastro-intestinal tract. The stomach, small bowel or colon may be involved.

The tryptic action of the pancreatic enzymes can produce vascular necrosis and hemorrhage in all tissues of the body. This probably accounts for the mucosal ulceration and subsequent hemorrhage. Further study is in progress to establish positively the cause of this ulceration. In addition, the possible effect of acute pancreatitis on the prothrombin activity is being reviewed.

FAT EMBOLISM

We had one patient with acute pancreatitis who suddenly expired while an abdominal paracentesis was being done. At autopsy, numerous fat emboli were seen in the lungs. The mechanism for this phenomenon, whether traumatic in origin or related to the acute pancreatitis, is not clear.

TETANY

Clinical tetany may be present in patients with acute pancreatitis. It is not a frequent finding, but it may confuse the clinical picture. This symptom is explained by a simple biochemical reaction in which the lipase acts upon the fats and splits them into glycerol and fatty acids. The ionizable calcium is mobilized and combines with the free fatty acids forming the calcium soaps which are characteristic of the disease. Edmondson and Berne [3] have reported the cases of tetany in this series. They observed that a blood-calcium level below 7 mg. per 100 cc. indicates a fatal outcome.

SHOCK

Most of the textbook descriptions of acute pancreatitis list profound shock as one of the common findings. However, some of the recent articles in the literature indicate that this is not a characteristic finding of acute pancreatitis. In our previously reported series, 80 per cent of the patients had no clinical evidence of shock on admission. It usually is not one of the early findings of the disease. However, in the fatal cases, the patients pre-terminally develop evidence of profound peripheral vascular collapse. The so-called characteristic mottling of the skin also is present. The peripheral mottling of the skin and "peculiar cyanosis" are on the same basis of peripheral vascular failure as that seen in secondary shock from any cause. This should not be confused with the brownish or ecchymotic discoloration which results from the digestive action of the blood-tinged pancreatic fluid.

TEMPERATURE

Changes of temperature are of little value in the diagnosis of acute pancreatitis. During the early stages of the disease, the temperature usually varies between 99° F. and 101° F., which is within the range seen in any comparable acute inflammatory lesion. The temperature chart, however, is the best guide in determining the course of the disease. As long as the temperature is elevated, the process probably is active. The elevation of temperature is an expression of the active inflammation or necrotic process in the pancreas. Another interesting feature of the temperature curve of acute pancreatitis is the pattern seen in fatal cases. Patients who die, frequently develop a terminal hyperpyrexia (106° F. to 107° F.).

PULSE

The pulse range in the acute phase of the disease has no typical pattern. It usually is decreased in proportion to the temperature elevation. The patients who develop clinical shock have a tachycardia in proportion to the severity of the shock.

CONCLUSIONS

1. The response to be expected from pancreatic disease is largely determined by its anatomical location.

2. Pain, nausea, and vomiting are the most common symptoms of acute pancreatitis.

3. The various locations, radiations, and changes in the pain can be explained on a pathological and physiological basis.

4. The diarrhea often present in acute pancreatitis is caused by colonic hypermotility and the absence of pancreatic enzymes in the intestinal tract.

5. Massive gastro-intestinal hemorrhage results from ulceration of the mucosa.

6. Clinical tetany may be present in patients with acute pancreatitis.

7. Shock is not a characteristic finding of acute pancreatitis.

8. The course of the disease can best be determined by study of the temperature chart.

9. The pulse range has no typical pattern.

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Spontaneous Fracture of the First Rib Due to Muscle Pull

A Case Report

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FRACTURES of the first rib unassociated with other fractures are very rare. Spontaneous fractures of the first rib due to muscle pull are even more rare, being 6 per cent of all fractures of the first rib as quoted by Breslin,[2] Knoepp.[7]

Breslin in 1937 reported five cases and in reviewing the literature through 1933 he found 27 cases of isolated fracture of the first rib and two of these were due to muscle pull. Outland and Hanlon[10] in 1938 reported one case due to muscle pull. Aitken and Lincoln[1] in 1939 reported a case of fracture of the first rib due to muscle pull. Kulowski and Ryan[8] in 1940 reported one case of isolated bilateral fracture of the first rib in which evidence of brachial plexus damage appeared a few months after the injury with an unilateral Horner's syndrome. Knoepp[7] in 1941, in a review of 386 cases of rib fractures of all types, found 32 isolated fractures of the first rib, and two of these were due to muscle pull. Cohen[4] in 1943 reported three cases of isolated fracture of the first rib found in the course of routine roentgen examination of armed force selectees for tuberculous lesions. Garber[5] in 1944 reported one case due to muscle pull. He reviewed the literature and found about 64 reported cases of first rib fracture unilateral and bilateral, due to all causes. Gutman[6] in 1944 reported seven cases of isolated fracture of the first rib associated with blast forces. Bowie and Jacobson[3] in 1945 reported 17 cases, found in routine examination during the period of six months from August 1943 to February 1944, in which the first rib showed changes which could be interpreted as being due to fracture. They regarded their cases not as spontaneous fractures of the first rib, but as congenital anomalies. Proctor, Campbell and Abramson[11] in 1945, reported three cases of fracture of the first rib which they called fatigue fractures due to "continual rhythmical stress on the soft tissues supporting bony structure."

The first rib is the shortest and straightest of all the ribs and lies almost horizontally in the mid-neck. It is attached to the manubrium sterni anteriorly and the first dorsal vertebra posteriorly. It is adequately protected against direct injury by the clavicle in front and the scapula behind. Because of this apparently adequate protection, it is difficult to see how the rib can be fractured by direct trauma. It is the consensus that this uncommon fracture is ordinarily not caused by direct trauma, but by indirect or transmitted force. According to Lane,[9] the fracture is brought about in any one of three ways.

1. Indirect trauma—the force being conducted through the clavicle.
2. Direct trauma — the force being conducted through the back.
3. Indirect trauma—the force being transmitted through the manubrium sterni.

When trauma has played no role and an isolated fracture of the first rib is found, it is believed due to the contraction of the scalenus anticus muscle during great stress.[1,5,10]

There is usually complaint of pain, but frequently this symptom is absent or is so slight that it is disregarded by the patient, as is strikingly illustrated in the three cases reported by Cohen.[4] Many cases are found in the course of routine roentgen examination for other pathology, the patients giving no history of trauma and having no recollection of pain. Because of the absence of pain in some cases, Bowie and Jacobson[3] are "of the definite conviction that in all our cases the changes as demonstrated are due to anomalous development of the first rib." With spontaneous fracture due to scalenus anticus pull, how-



Roentgenogram shows fracture of first rib as described in the text.

ever, there is always a history of sudden onset of pain. In the few reported cases of spontaneous fracture due to muscle pull, there were no complications such as described by Breslin,[2] Knoepp[7] and others, and apparently complications do not occur in fractures of the first rib due to muscle pull. Healing is always uneventful either by callus formation or by the appearance of pseudarthrosis.

CASE REPORT

A Negro, 21 years of age, single and a professional boxer, while engaging in a boxing match on May 14, 1946, pulled his left hand back sharply and felt something snap in the left side of his neck. This was accompanied by severe sharp pain in the left supraclavicular area. He was able, however, to finish the match. For the next week or so, there was slight pain in the region of the left shoulder posteriorly, with no radiation of pain. As the discomfort persisted, he consulted a physician on May 24, 1946. Roentgen examination at this time showed a fracture of the left first rib. On May 27, 1946, when he first came under our care, he complained of very little discomfort in the left supraclavicular fossa with slight tenderness in the same region. There was no restriction of motion of the neck or left shoulder joint. On June 10, 1946, there were no complaints and no tenderness was found. Roentgen examination taken on that date showed fracture of the first rib at the junction of the posterior with the middle third on the left side with the fragments in good position and with no callus formation. Follow-up roentgen examinations are not available.

SUMMARY

1. Because of the infrequent occurrence, a case of spontaneous fracture of the first rib due to muscle pull is presented.

2. A review of the literature discloses only seven previously reported cases of fracture of the first rib due to muscle pull.

3. The fracture is brought about by contraction of the scalenus anticus muscle during physical stress, accompanied by sudden pain and followed by good recovery with no complications.

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MEDICAL PROGRESS:

Amebiasis — Pathology, Diagnosis, and Recent Developments in Therapy*

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SINCE *Endameba histolytica* does not exist as a simple commensal in the fecal stream even in so-called healthy carriers, amebic infection means some pathologic lesion is present. In all affected persons these organisms are repeatedly invading the epithelium with greater or lesser success, depending upon many obscure factors of local resistance. The identification of the amebic lesions with the clinical category of carrier or active states is not entirely possible. Many clinically quiescent patients harbor large ulcerous lesions (Musgrave, 1910; Bartlett, 1917) and in others much intestinal distress may exist with only unimpressive lesions. The size and extent of the gross lesions may correspond only slightly with the clinical picture and the microscopic appearance is correlated to an even lesser extent. In general, the carrier state lesions differ only in degree from those of the symptom-racked patient.

Endameba histolytica invades the mucosa by secreting histolytic substances and by active mechanical penetration. Which of these factors is dominant has not been established (Hegner, Johnson, and Stabler, 1932). The organism may invade any portion of the large bowel; however, lesions tend to be most numerous in and about the rectum and/or cecum with the intervening large bowel being less frequently involved. In more than one-half of the cases, the ulcers are scattered throughout the colon. Grossly, these sites of invasion are characteristic enough to be highly diagnostic. In the early state, the lesions are found on the tips of the mucosal folds where they are seen as very small flask-shaped nodules from 2 to 4 mm. in diameter. They often have a needle-point sized central opening. Upon sectioning, the centers are seen to be filled with a brownish-yellow gelatinous material. The surrounding mucosa is congested.

In the further evolution of these early lesions, frank ulceration occurs and the gross appearance becomes even more characteristic. They become greatly enlarged and develop a thickened, raised, "button-hole" margin. At the same time, undermining of the deeper tissues occurs and not infrequently adjacent ulcers may have interconnecting deep tunnels. These irregular ulcers, although extensive, often have remarkably well preserved and uninflamed mucous membrane between them. Because of this relatively unaffected intervening tissue, amebic ulcers, although ragged and overhanging in their depths, often have a "punched out" appearance.

Microscopically, the lesions of amebic dysentery are quite distinctive. The organism invades directly and evidence of histolysis is soon present. There is no characteristic pyogenic reaction; in fact, the leukocytes are distinctive by their rarity. The areas of ulcerations contain digested gelatinous cellular debris which may be infiltrated by leukocytes due to the presence of coincidental intestinal bacterial infection. Because of the bacteria, certain surrounding secondary leukocytic reaction may be evident.

The invading ameba, wherever found in the body, tends not to remain in the dead central debris, but seeks the inner margin of viable cells. (Cysts are not found in tissues.) From there, they migrate to varying depths throughout the organ. The ulcerations may extend to any depth, but with a slow process and an adequate walling off peritoneal reaction, perforation usually will not occur.

Healing of amebic ulcers may be complete and may either follow therapy or be spontaneous. The degree of deformity is purely a function of the size of the original lesions. Those involving only the lamina propia heal completely; those extending deeper revealing greater degrees of scar formation with resultant deformity. The lesions in the carrier state are usually, but not always, small and superficial whereas in the active dysentery stages, the ulcers tend to be larger.

Complications of Amebiasis: Intestinal perforation is one of the more frequent complications, being present in about 3 per cent of clinical amebiasis and in about 10 to 15 per cent of autopsy cases (Strong, 1925; Clark, 1925). This is likely to occur in the cecum, sigmoid or rectum and most often tends to wall off for awhile and form local peritoneal abscesses before progressing further. Complete bowel obstruction is rare, but partial obstruction with resultant chronic constipation is much more frequent.

In view of the high incidence of cecal amebic lesions, it is not surprising that appendiceal complications are of considerable incidence. The ameba invades the organ directly and are present in about 20 per cent of appendicies at autopsy (Clark, 1925). The gross and microscopic appearance reveal the typical lesions of ameba as found elsewhere in the

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bowel. Severe intestinal hemorrhage is of a rare occurrence in any stage of amebiasis, although moderate blood loss and chronic anemia is the rule. Exsanguination has been reported, but it is a medical curiosity.

Distant Complication: Perhaps the major complication of amebiasis is the formation of metastatic abscesses, of which those in the liver are the most important. In the deeper intestinal lesion, the organism continually extends into portal vein branches, into lymphatic tissue spaces and sometimes onto the serosal surface areas. By these routes, they spread to distant organs. The liver certainly must get its greatest numbers via the portal vein or the peritoneal cavity. Within the liver, the ameba may lodge, multiply and invade with consequent formation of foci of lysed liver cells referred to as liver abscesses. These lesions are usually (55-60 per cent) multiple, less frequently solitary (Clark, 1925). They are distributed among the lobes of the liver in the approximate proportion of the relative tissue volume of the respective lobes, being thus most frequent in the right lobe, 55 per cent according to Clark.

The involved liver is enlarged and may show evidence of local bulging if an abscess is near the surface. Abscesses vary greatly in size, the largest ones often being formed by the confluence of smaller adjacent lesions. These areas of amebic histolysis are not simple cavities, but consist instead of honeycombed channels of digested liver cells that are transversed by irregular strands of liver connective tissue which is more resistant to amebic digestion and therefore remains behind. Thus, an amebic liver abscess is very ragged on its inner surface, and only becomes smooth lined or relatively encapsulated after the passage of much time with consequent secondary fibrosis and connective tissue contraction.

Microscopically, the liver abscesses are characterized by the presence of the central brown, autolyzed liver and blood tissues ("anchovy paste"), by an irregular margin of viable but injured liver cells among which active ameba are wandering. The ameba are rarely present in the original necrotic material of the liver abscess; however, after draining of the abscess they are more frequently found in the subsequently drained material. The characteristic tissue reaction is again evident in that leukocytes are infrequent, lysis is evident and pyogenic reactions predominant only when secondary bacterial invasion occurs.

Lung abscesses are, next to the liver, the most frequent site of amebic metastases. The right lower lobe of the lung is almost always the site of abscesses. It is quite evident that this is due to a direct extension of ameba from the liver to the lung, rather than independent hematogenous dissemination to the lungs.

Wherever an amebic abscess enlarges, it tends to extend to the surface of the organ. On the surface, a temporarily localized inflammatory reaction occurs; however, as the process continues, bulging and local tenderness develop, and finally rupture into adjacent areas occurs. If the liver is involved, this may be to the skin, lung, gallbladder, intestinal tract, peritoneum. In the lung, it may break into a bronchus or through the chest wall. Secondary dull, indurated and indolent cutaneous amebic ulceration may result. After successful treatment with an amebacide, abscesses heal by walling off with a dense layer of connective tissue unless too much secondary bacterial infection exists and thus keeps the abscess active. Small or drained lesions heal by organization and filling with young fibroblasts with subsequent replacement by dense connective tissue.

LABORATORY DIAGNOSIS

Since the specific diagnosis of amebiasis is essentially a laboratory problem, the physician, in order to verify his clinical findings must exert every effort to aid the laboratory, in obtaining suitable specimens for examination. The ultimate diagnosis of this disease depends solely upon the demonstration and recognition of the causative organism, *Endameba histolytica*. It is, therefore, imperative that if a correct and early diagnosis be made, certain procedures must be followed and well-established prerequisites be not ignored. Of primary importance is the availability of laboratory personnel skilled in the recognition of the protozoa which inhabit the intestinal tract of man. Competence in this diagnostic field is gained only by practical experience and familiarity with the problems which constantly arise in connection with fecal examinations. Much time and effort are saved and the dangers of misdiagnoses appreciably reduced if the clinician will survey laboratories in his community to determine whether there is a competent parasitologist among them. If such a parasitologist is not available, it may be necessary to send specimens to a laboratory located at some distance which is staffed and equipped to perform critical examinations.

The clinician may have to resort to the mails for transmission of specimens to a suitable laboratory. This can be done if fecal smears are prepared in the office or in a local laboratory and shipped in alcohol. For various reasons, it is unwise to send stool specimens through the mails if a reliable examination for intestinal protozoa is desired.

The necessity for studying absolutely fresh specimens cannot be overemphasized. If this requirement is disregarded, diagnostic difficulties may be encountered by the examiner. It is preferable to have the stool produced in the proximity of the laboratory than to have it brought in by the patient. In those instances where a stool cannot be passed readily, the use of a rubber catheter or rectal swab may produce enough fecal material for examination purposes. In all cases where amebiasis is suspected, it is mandatory that a series of stool specimens be examined.

The laboratory findings disclosed as the result of the examination of a single stool specimen are of little significance except, of course, if *Endameba histolytica* is found. Carefully controlled surveys have indicated that at least one-third of the cases of amebiasis are missed if the examination is limited to

one stool specimen. The fluctuations in the clinical condition of the patient, the life cycle of the parasite and the various environmental factors present in the lumen and tissues of the intestinal tract determine from day to day the presence or absence of ameba in the stool. With some patients *Endameba histolytica* may be found upon daily examination over an extended period, while in others, the parasites occur in cyclic showers at intervals. While it is impossible to designate the number of stools which should be examined since conditions vary with each individual, it has been our practice to examine one specimen daily for six consecutive days. There is no doubt that in certain instances a much more extensive series of examinations should be made before *Endameba histolytica* finally would be detected. The judgment of the clinician, as well as time and expense are factors which would necessarily control the extent of the series.

For the proper gross and microscopic evaluation of a stool specimen evacuation should be normal and not induced by strong purgation. At times, the administration of a mild saline cathartic or bile salts to the patient may aid in the detection of the parasite. Castor oil, mineral oil and barium preparations should not be prescribed during the period the patient is submitting stool specimens to the laboratory. These substances complicate the microscopic picture and add to the diagnostic pit-falls which are ever-present in fecal examinations.

In the absence of adequate laboratory facilities for performing an exhaustive search for *Endameba histolytica* presumptive evidence of infection in the more acute phases of amebiasis may be obtained by gross examination of the feces and microscopic study of the cytology of the freshly passed stool. These observations will aid considerably in the differential diagnosis of amebic dysentery, bacillary dysentery and other dysenteric disorders. The characteristic stool in amebic dysentery contains blood and mucus intermingled with particles of feces. The blood is dark red in color and clotted. The mucus is fluid and does not adhere to the bed-pan. The odor is offensive and the reaction is acid. In bacillary dysentery, the stool frequently consists of little more than pure blood and mucus. The mucus is tinged with streaks of bright red blood, is very viscid and adheres to the bed-pan. The odor is not offensive and the reaction is alkaline.

Microscopically, the stool in amebic dysentery is characteristically fecal in appearance and contains numerous bacteria, yeasts, and particles of food debris. It is not particularly cellular in character although there are usually some lymphocytes and tissue cells. There are comparatively few pus cells. Many of these have degenerated to such an extent that it is impossible to identify them. The red cells have clumped. Charcot Leyden crystals may or may not be present and motile amebas may be observed. On the other hand, the stool of bacillary dysentery is not fecal and contains very few bacteria or particles of food debris. There are large numbers of pus cells showing little degenerative change. The red cells are distributed throughout the microscopic field with little tendency toward clumping. Large macrophages containing red blood cells are frequently present. These are often mistaken for the motile forms of *Endameba histolytica* particularly when they show a slight amoeboid movement.

To establish a laboratory diagnosis of amebiasis, it is essential that specific technics which have proved their worth through long application be utilized. The use of saline and iodine-stained fresh fecal smears, the preparation of permanent wet-fixed iron hematoxylin-stained smears and the utilization of concentration technics are procedures which should be employed if a dependable diagnosis is to be expected. Cultural methods although usually restricted to the well-equipped laboratory may be advantageous in certain instances. The use of the sigmoidoscope which exposes the ulcers and facilitates the collection of suitable material for examination is a helpful diagnostic aid. Cotton swabs are not suitable for the collection of material at the time of sigmoidoscopy—long handled curettes are much to be preferred. Microscopic examination of the material thus obtained should be done immediately: smears should be fixed in Schaudinn's fluid and subsequently stained by the iron hematoxylin method. Cultures should be made if a suitable medium is available.

The important role of the iron hematoxylin-stained fecal smear in the routine laboratory diagnosis of amebiasis cannot be overstressed. To base the critical diagnosis of amebiasis on evidence obtained solely from fresh fecal smears or from wet mounts of concentrated fecal specimens is hazardous. The numerous species of amebas and flagellates, the various cells constituting the cellular exudate as well as the wide variety of animal and vegetable food particles complicate the microscopic picture and in many instances their characteristic morphologic differential features can only be determined if an iron-hematoxylin-stained preparation is utilized.

The complement fixation test for the detection of infections with *Endameba histolytica* has not been perfected to the extent where it can be adopted as a dependable routine laboratory procedure. There is no doubt that such a test would be of distinct aid in those instances where amebas cannot be found by the usual laboratory methods. This is particularly applicable to cases of amebic hepatitis and abscess of the liver, where so frequently it is not possible to demonstrate the parasites in the feces. There are present indications that a more satisfactory type of antigen is being developed. It is questionable, however, whether the complement fixation test will supplant the usual laboratory procedures now employed which reveal the causative agent of the disease.

Surgical intervention in the presence of severe amebic infection may lead to serious consequences. The differential diagnosis of amebiasis and appendicitis may be difficult and if mistakes are to be avoided, every effort should be made to detect the parasite before an operation is performed. Rapid

multiplication of *Endameba histolytica* may occur in any sinus which develops about the bowel, following surgery. Granulomatous lesions of the sigmoid, rectum or anus may be of amebic origin and are often confused with carcinoma. When such lesions are present differential diagnosis should include sigmoidoscopic examination, stool examination, radiologic studies, and a trial course of emetine before surgery is attempted. In apparent cases of chronic ulcerative colitis, particularly where a colostomy is indicated, it is imperative that infection with *Endameba histolytica* be excluded. A rapidly spreading, cutaneous amebic ulcer may develop around the colostomy wound unless controlled by injections of emetine.

RECENT DEVELOPMENTS IN THERAPY

Since the advent of carbarsone and vioform, little has been added to the list of chemicals available for the treatment of amebiasis. Modifications of the mono-iodo hydroxy quinoline, chiniofon (also known under various trade-names such as yatren and anayodin) resulted in the introduction of diodoquin by Tenny in 1936.

For the acute phase of either intestinal amebiasis, characterized by diarrhea or dysentery, or the hepatic complications, namely hepatitis or abscess of the liver, emetine is still relied upon by many physicians for symptomatic relief. It is recognized, however, that emetine alone will not clear the majority of patients of their ameba. Also, it is realized that if hepatic function is adequate, either carbarsone or vioform or even diodoquin may be relied upon either alone, in full dosage or in combination with emetine to clear acute intestinal or hepatic forms of the disease. While it is recognized that response to emetine is often dramatic, this is misleading to the uninitiated. Only by repeated and careful examination of a series of stools can we have any assurance of clearance of the bowel of amebas. Six daily specimens at six-week intervals for a three to six months follow-up period are required. Finally, proctoscopic examination of the patient after therapy will often give definite indication of whether improvement has followed therapy.

It should be remembered that emetine, as well as most of the other currently available amebacides, will cause frequent liquid stools when used to excess. This confuses the picture since we cannot be certain without careful examination of the patient, whether his symptoms are due to amebiasis or to excessive use of anti-amebic agents.

For chronic amebiasis, which may be more often characterized by constipation rather than diarrhea, the more effective, less toxic agents, carbarsone and/or vioform are recommended. One-quarter gram capsules or tablets, given three to four times daily, to a total of 5.0 grams for carbarsone or 7.5 grams for vioform are employed. Actually one drug may be alternated with the other over a continuous period of one month to ensure a more certain chance of success.

During the years of World War II, a great variety of newly proposed amebacides was studied. Of these, three have offered some promise in the test tube and in naturally infected monkeys in our laboratory. They are now under trial in man and there are indications that clinical confirmation of earlier laboratory experiences will be reported in the near future. These agents are modifications of carbarsone, which is a pentavalent arsenical. They contain trivalent arsenic and in one case, that of carbarsone oxide, oxygen is attached directly to the arsenic. This drug, while effective orally, causes some topical changes in the gastric mucosa and for this reason, enteric coating of tablets is required. The other two arsenicals, which are known as thioarsenites, have sulfur substituted for oxygen which detoxifies the arsenic for host tissues at a concentration still active against the ameba. These are tolerated within the dosage range of carbarsone and have thus far, proved more effective in early clinical trials. In fact, when used orally, alone or by rectum in retention enemata as well, results comparable to those attained with emetine have been noted. In addition, within 24 hours to 72 hours, the bowel has been cleared of pathogenic amebas. To date, only an increase in number of bowel movements during the first 48 hours and in three cases, gastric distress has been noted. Far more patients will have to be studied before a definite impression of efficiency is established.

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California Cancer Commission Studies*

Chapter VI

Sarcoma of Soft Tissues

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THE processes that produce "tumor" formation in soft tissue are inflammation, cyst formation, and new growth.

A. Inflammation

Acute inflammation is recognized by the history and local findings, but soft tissue sarcoma may reproduce these cardinal signs. This is most likely to happen in the rapidly growing high grade malignancies.

Specific chronic granulomata as tuberculosis, leprosy, sarcoid, coccidioides, actinomycosis and syphilis may so closely duplicate the features of sarcoma that microscopic examination may be necessary to differentiate the processes. Study of smears, cultures and animal inoculation of aspirated material may identify some of these.

Foreign body granuloma, the result of injury to subcutaneous tissue or parenteral administration of medication, is suspected from the history of trauma or injections. Foreign body reactions are most likely to follow the use of oily vehicles.

B. Cyst Formation

A *cystic lesion,* such as epithelial-lined cyst, hematoma, bursitis, hygroma and cystic neoplasms in soft tissue, is frequently recognized by needle puncture. A generous amount of aspirated fluid or pus should be preserved in a sterile closed tube for the laboratory to use in making a complete study.

C. New Growths

New growths arising in soft tissues are derived from connective tissue, muscle, nerve sheath, fat, endothelium and leukocytes. The natural history of neoplasms of cells of these types does not run a uniform course since all grades of malignancy are represented in a series of cases.

DIAGNOSIS

If therapeutic measures employed in soft tissue sarcoma are to be guided by the knowledge of the type of cell and degree of malignancy, the information must be obtained from histological study of a biopsy specimen. Several methods are available for the removal of specimens.

Surgical Biopsy:

(a) Excision Biopsy.—Smaller tumors suspected of being malignant should be removed with a wide margin of normal tissue. This would then constitute both biopsy and treatment. *All tumors should be examined microscopically. Never should any be thrown away.*

(b) Incision Biopsy.—It is inconceivable that a radical operation be performed for soft tissue sarcoma without histological proof. When the tumor is large, incision should be made into it and a small piece removed for frozen section study. However, if a satisfactory study cannot be accomplished by quick section methods, the surgeon should close the wound and wait the 24 hours necessary for paraffin sections before proceeding with an extensive operation. The removal of a small superficial area of a tumor does less to disseminate a malignant process than wide but incomplete removal. *Incision biopsy should never be done unless a pathologist is present and the surgeon is prepared to perform as extensive an operation as may be indicated.*

Aspiration Biopsy:

Aspiration biopsy is a technic requiring special training for proper performance and interpretation. With these limitations it is a useful procedure. It is well to choose as a puncture site a place where the entire tract may later be removed if that is shown to be necessary.

CLINICAL AND HISTOLOGICAL TYPES OF SOFT TISSUE TUMORS

Neoplastic cells that grow slowly may be recognized by microscopic studies as fat, fibroblast, nerve sheath, endothelial and smooth or skeletal muscle. Benign tumors and well differentiated malignant ones may be named according to the type of cell that is identified. Rapidly growing and poorly differentiated tumors are difficult or impossible to identify, particularly with the single expedient of a hematoxylin and eosin stain. The undifferentiated lesions are usually named with some feature of morphology as prefix (such as spindle cell, oat cell, round cell, giant cell, etc.) followed by the word sarcoma. It is obvious that any of the soft tissues might give rise to cells of spindle, oval or round shape which are of large or small size and have single or multiple nuclei. The descriptive terms are non-committal, but due to the immaturity of the tissue or the histological technique employed, no better, identifying term is possible. This large group of less well-differentiated lesions remains for future study to name and classify, and when more complete

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and accurate data on the natural history of sarcoma is accumulated, more specific recommendations and prognostications can be made.

The following are brief characterizations of clinical and anatomic types of soft tissue tumors based on the present understanding:

Skin. The important sarcomatous tumors are fibroma, fibrosarcoma and the neurofibromatosis of Von Recklinghausen's disease. The common fibromas are indurated, dimpled, unencapsulated, fixed nodules of slow growth arising in the corium. They are recognized by the spindle or stellate cells and the parallel bundles of collageneous fibers which are usually deposited in a recticular pattern. Fibroglia fibrils are readily demonstrated. In uncommon instances, rapidly growing malignancies may develop and these should not be underestimated in their ability to invade. Due to frequent retrograde changes with hemorrhage, pigmentation and lipoid accumulation, fibromas are sometimes referred to as histocytoma. The cutaneous nodules of Von Recklinghausen's disease are a combination of fibrous tissue, nerve fibers and sheath cells. The lesions are susceptible to retrograde changes, and the structure complicated by mucoid degeneration. They are less prone to malignant change than the deeper seated lesions along nerve trunks.

Subcutaneous tissue. The lipoma is by far the most common soft tissue tumor and its clinical features are diagnostic in the majority of instances. There is no reason, however, why the surgeon cannot inspect the tumor thoroughly after removal by multiple cut sections and insist upon microscopic examination of any lesion having a pale color or texture different than normal adult fat tissue. In the case of large tumors, especially the multilobulated and poorly encapsulated lesions, malignant change must be suspected and resection rather than enucleation must be done. The liposarcoma of adult type fat tissue is one of the most insidious, least well defined, persistently growing and unerringly lethal forms of soft tissue sarcoma. The fact that early operations show fairly mature types of cells which become increasingly more immature in recurrences, demonstrates the false sense of security obtained from histological study where features of natural history of neoplasms are not considered. The mucoid stroma of embryonal types of fat tumors accounts for most myxomas described in the literature. Liposarcoma is usually not radio sensitive.

Fascia and muscle sheath. Fibrosarcoma arising from these structures is probably second in frequency to lipoma. Structurally, the lesions are composed of fibroblasts similar to those of the skin, but they are more likely to be arranged in parallel rows. The fibroglia and collagen fibers are diagnostic features, present in varying amounts and responsible for the density and toughness of the more mature types. There may be an element of expansive growth producing compression of adjacent tissues resulting in pseudo encapsulation, but there are always other zones of infiltration, especially along fascial and muscle planes and about the supporting vascular tissues. While fibrosarcoma is often assigned a position of low grade malignancy and considered late to metastasize, it is not worthy of this trust. All degrees of malignancy may be noted in a series of cases. The more rapidly growing undifferentiated lesions are inseparable from the highly malignant forms of liposarcoma, myosarcoma or nerve sheath tumors. The desmoid tumor is a clinical entity of fibrosarcoma of the abdominal wall, usually slow growing but diffusely infiltrating and requiring wide excision for cure. Recurrence is a likelihood if excision is not thorough. As a group, fibrosarcomas are not considered to be radio sensitive tumors, but occasional instances have been noted where involvement of areas technically inoperable have responded to supervoltage and teleradium therapy.

Muscle. Myosarcoma is an uncommon form of soft tissue sarcoma. It may arise from skeletal muscle cells although leiomyoma and leiomyosarcoma may begin in pilomotor muscles of the dermis and smooth muscle of the vulva, scrotum, nipple and blood vessel walls. This group presents the gross structure of leiomyoma of the uterus. Rarely a myosarcoma may be seen which runs a course similar to fibrosarcoma. The rhabdomyoblastic tumors seem to be uniformly malignant in soft tissue lesions. The cells are poorly differentiated and may appear largely as spindle shaped elements. The presence of giant forms may strongly suggest muscle origin, and a definite diagnosis can be made by demonstrating cross-striations in the cytoplasm. The tumors are usually rapid growing, have a tendency to retrograde changes, often becoming mucoid or hemorrhagic, and they seem to give rise to secondary deposits along the vascular pathway toward the lung. The primary lesion may show rather marked response to irradiation, although myosarcoma has been considered as a radio resistant tumor.

Nerve sheath. In the course of Von Recklinghausen's disease, sarcoma arising from nerve trunks often makes its appearance, and by virtue of its malignant growth, fatally terminates the disease of many years' standing. In other cases, solitary tumors involve nerves and appear to arise from the nerve sheath. Tumors proven to have arisen from nerves have a characteristic structure. The cells are deposited in palisades due to longitudinal fission of nuclei, and the fibrillar stroma closely invests the cytoplasmic borders. Many of the tumors are slowly growing, encapsulated and easily enucleated. Recurrence, however, is likely to occur due to unrecognized spread along adjacent nerves or to multiplicity of lesions. Malignant change may occur in an apparently quiescent neurofibroma, or malignancy may begin *de novo.* In either case a rapidly growing, infiltrating metastasizing sarcoma may ensue. The recognition of this malignant metamorphosis of the neurofibroma is an important feature of the microscopic examination. Nerve sheath tumors are radioresistant lesions.

Synovium. Synovioma is one of the less frequent forms of soft tissue sarcoma. It presents a histological pattern combining the aleveolar structure of endothelioma with the fibrous tissue elements of fibrosarcoma. In slowly growing tumors, this combination pattern is a charaeteristic histologieal entity. Less well differentiated lesions are inseparable from other varieties of spindle cell sareoma. These tumors usually arise in relation to joint synovium but may be seen in bursal or other connective tissue spaces. There is no characteristie natural history, the degree of malignaney varying between the extremes. Malignancy of higher grades is more common, however, and extensive local involvement with early metastasis may be anticipated.

Other types of primary sarcoma. Eneountered uncommonly as soft tissue tumors are the hemorrhagic sarcoma of Kaposi, recticulum cell lymphosarcoma and extraosseous Ewing's tumor.

Other types of benign tumors. There are a variety of less well defined but fairly common entities, usually of a benign charaeter, arising from soft parts. These include the fibrous nodules of Dupuytren's contractures sometimes mistaken for fibrosarcoma, especially on the sole of the foot, and giant cell tumors of tendon sheaths and synovial membranes.

In general the main clinieal feature of this whole group of tumors is the presence of a soft tissue mass.

Keloid should be mentioned in the differential diagnosis of soft tissue sarcoma. The nature of the lesion is usually obvious from its history and appearance but sections of the rapidly growing keloids can easily be misinterpreted as fibrosarcoma if the history of the previous ineision or trauma is not known.

The scar tissue of keloids will often resolve with x-ray treatment. Very bulky keloids may be excised and the wound treated with x-ray within 10-14 days to prevent re-formation.

TREATMENT OF SOFT TISSUE SARCOMA

A survey of the soft tissue sarcoma ease histories of which the writer has knowledge reveals that in those suecessfully treated a plan of operative procedure commensurate with the type and degrce of malignancy was followed. In the cases where treatment failed, the following features were elicited in a review of the treatment record:

(a) Attempts at removal of soft tissue tumors as office procedures with inadequate surgical facilities resulted in incomplete treatment, recurrence and extension.

(b) Soft tissue tumors were removed and not examined histologieally. Malignancy was discovered only after recurrences.

(c) Rapid enlargement, hyperemia and fever were mistaken for signs of acute inflammation.

(d) Repeated local recurrences of apparently histologically benign tissue were treated by multiple local operations. When the histological structure finally proved to be malignant, the disease was too far advanced for curative treatment.

(e) Attempts at enucleation of malignant lesions, even though eneapsulated, were always followed by more widespread recurrence.

(f) Faith was misplaced in the postoperative irradiation methods to "clear-up" foei of tumor which were obviously not removed.

(g) Attempts were made to preserve the function of an extremity when amputation was indicated. The belief that an extremity could always be removed if there were recurrenee did not delay the development of lung metastases.

(h) Patients refused to aecept amputation or mutilating surgery.

Although these observations are made in retrospect, they should whet the imagination of the clinician to a consideration of the following questions when confronted with a soft tissue swelling:

(a) By what methods can information safely be obtained coneerning the nature of the lesion?

(b) Are adequate surgical faeilities available to proceed with as large an operation as is necessary, if biopsy establishes the lesion as being malignant?

The treatment of soft tissue sarcoma in most instances must be wide surgieal removal. This may mean destruetion of function or even amputation.

SUMMARY

1. There is a wide variety of lesions located between the epidermis and the periosteum which are characterized by tumor formation, and the information contributed by the history, examination and laboratory tests is often inadequate for diagnosis.

2. Since the planning of suecessful therapy for neoplastic disease must be based upon knowledge of the type and degree of malignancy, more exact information becomes imperative. This information may be supplied by a study of materials removed by needle puncture, needle biopsy or surgical biopsy.

3. All soft tissue sarcomas except radio-sensitive lesions like lymphosarcoma and Kaposi tumor should be treated by surgery if they are operable.

4. Enucleation should be attempted only in benign encapsulated lesions such as lipoma. Small tumors whieh arouse clinical suspicion of sarcoma should be removed by wide block excision for biopsy. Larger tumors, even though appearing to be encapsulated, should be removed by wide block excision. Amputation must be a more frequent operation if more lives are to be saved by treatment of sarcoma.

5. Fibrosarcoma, myosarcoma and liposareoma sometimes exhibit a considerable radiosensitivity, and in inoperable cases irradiation treatment may be successful in checking the growth of the tumor for a considerable period of time.

Chapter VII. Childhood Cancer, by John M. Kenney, M.D., will appear in this section in the November issue.

California MEDICINE

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EDITORIALS

Medical Care in Hospitals

Despite the fact that a sprained ankle or an attack of acute rhinitis may be better and more economically taken care of at home, the tendency is increasing for our fellow citizens to go to a hospital for such minor ailments. Their visit involves not only the expense of registration, bed and nursing care, but basic diagnostic medical procedures, which, if necessary, could often be performed with equal efficiency at a physician's office near the home. A hospital is the logical place to refer patients for procedures of a major or complicated nature, requiring elaborate medical or surgical care: the oxygen tent, the operating room, the incubator all function more efficiently in a well run hospital. The doctor's office or patient's home is the logical place wherein about 85 per cent of illness can be taken care of, and where the added expense of institutional overhead can be avoided. Most diagnostic and many therapeutic procedures and some operations can be performed in a well equipped physicians' office or physicians' medical building.

In recent years the increased cost of operating institutions has forced hospital administrators and boards of trustees to seek sources of income over and above those which might be described as legitimate. The primary function of the average private hospital is to furnish bed, board and nursing care to sick persons. With the true cost of furnishing a bed climbing daily higher, many hospitals have sought "hidden taxes" in the form of professional revenue from various medical services. Many have gone so far as to choose departmental physicians on the basis of the income they will accept rather than the basis of their professional qualifications. Result: the patient expecting and paying for a highly competent type of diagnostic medical service often receives an inferior one.

The patient is in the hospital to be cured of some ailment, sometimes a serious one such as cancer or pneumonia. He is anxious and willing to secure the best type of medical attention available. If it is a question of removal of a breast or amputation of a leg, upon whose opinion must this grave decision sometimes be made? Upon the pathologist's or the radiologist's. With the highest type of specialist in these fields, the patient is apt to obtain accurate diagnosis and greater opportunity for cure. Similarly, other members of the medical staff benefit by the advice of their association and consultation with experts. With inferior staff members, the reverse is true.

It probably never occurs to the average patient that his tumor may be submitted to x-ray examination or pathological study by a specialist chosen not because he is the best available man in his field, but because he will accept a salary. His life will be in the hands of a man often inferior to a colleague working on the outside because the hospital would not permit the latter to practice his profession on an ethical and legal basis. There *are* instances, fortunately, in which the attending physician has been sufficiently alert to this danger to insist that the patient be taken out of the hospital by ambulance for neeessary special diagnostic or therapeutic procedures, and then returned to the hospital.

In *Hospital Management* for May, 1947, there appears a frank statement of the problem, a statement

which will doubtless come to the attention of interested groups and boards of trustees anxious to improve the care of the hospitalized public. This statement enhances one which appeared in the pages of this Journal in 1937 (Vol. 46, page 136).

It is recognized that for simplified bookkeeping as well as streamlined accounting, it would be very convenient to include the surgeon's fee, the radiologist's fee and other professional charges in the hospital bill. The most ready way of doing this is to place all these men on a salary basis. When men are placed on a salary (outside of institutions devoted to research or teaching) the inevitable tendency is for him who pays the piper to call the tune. If, on the other hand, the hospital will set a rental which will permit a fair yield from the space provided, or the space and equipment leased, it will be fulfilling its function. Patients in the average private hospital could well support two or more first class radiologists or pathologists when often there is only a mediocre part-time one.

The solution is in the hands of the profession. If physicians will urge that the administrator and the hospital board appoint a staff pathologist or radiologist on the basis of his *qualifications* and not the level of the salary he will accept, the result will be better medical care for the patients who place their welfare in the hands of the medical profession.

An "E" for Medicine

Now that the war is over and the ballyhoo of patriotic proddings ended, the once familiar sight of the Army-Navy "E" flag for industrial excellence has disappeared from the American scene. While this pennant was patently a morale-builder, nevertheless it had its sentimental value as token of a job well done. The dollar paid to dollar-a-year men fell into the same category.

Thus it is with pardonable pride that the doctors of California may accept an analogous token from the California State Department of Employment for services well performed under the Sickness Disability Act adopted last year by the State Legislature. The disability insurance managers of the department in a recent meeting adopted a resolution to "Commend the Doctors in each district for a job well done." These managers are the front-line forces of the Department of Employment, the heads of the district offices which process first-hand the myriad claims for disability payments from the eligibles among three million employed Californians.

This tribute to the medical profession emanates from a source which could easily have generated instead a sense of distrust, annoyance or just plain dislike. The lay employees of a governmental bureau, charged with applying legislation—particularly, new legislation—to a vast number of people are sometimes inclined to become dictatorial and officious. The sense of security and authority behind such employees may have the effect of causing inflated egos and bad manners. Obviously this is not the case in the application of the Sickness Disability Act.

California doctors have every cause to be proud of this fine compliment. The only criterion they had prior to enactment of this law was the experience in Rhode Island, where numerous difficulties had arisen out of the first of such state laws to be adopted. The doctors were put in the uncomfortable position of being asked to serve as judge and jury in the thousands of claims passing through the departmental offices. They were subjected to pressures from their patients, some of whom apparently relished the prospect of drawing cash sickness disability benefits in lieu of pay for performing their customary employment duties. The doctors were asked to make prognoses in terms of length of time the patient would be unemployable, many of these estimates being little more than guesswork. They were asked to determine whether or not the patient was able to perform his "usual and customary occupation." A report on physical findings from an examination is one thing but a determination of whether or not Joe Doakes can drive his truck or handle a spindle requires a detailed knowledge of industrial processes which is not customarily included in medical school curricula.

That many of these difficulties have been overcome in California is attributable to the commonsense application of this new law by some of the top executives whose duties include the operation of this phase of the Department of Employment's activities. The medical profession has not adopted any resolutions along this line but the physicians of California know the men who are responsible for the smooth working of the law. If an "E" were forthcoming from medicine in return for the one just given the profession, it would go jointly to T. H. Mugford, Vice Chairman, and Doctor Bert S. Thomas, Medical Director, of the Department of Employment. With such men in authority, the doctors may count upon a sensible, workable application of a law that, under other conditions, might easily have opposite results.

CLINICAL CONFERENCE

FROM THE MEDICAL STAFF CONFERENCES OF THE UNIVERSITY OF CALIFORNIA HOSPITAL, SAN FRANCISCO, CALIFORNIA, MARCH 19, 1947

Case Presentation by Doctor N. Foreman*: A white female, aged 42, was admitted to the hospital March 6. Her complaints were progressive weakness, fatigability and dyspnea for the preceding year and a half. In June of 1945 she noted the insidious onset of easy fatigue and a dull ache in the anterior portion of the neck, similar to that she had experienced following her first pregnancy 11 years before, and for which she had been given thyroid over a period of four years. In the fall of 1945 the BMR was normal, the hemoglobin was 50 per cent. She was given iron, liver extract, calcium and vitamins for the following year without much benefit. In November 1946 she was found to have protein in the urine and spent a month in bed, but had no remission of her symptoms. She was admitted to the East Oakland Hospital in January 1947 for bone x-rays and sternal puncture. The diagnosis of multiple myeloma was made. Stilbamidine therapy and a diet low in animal protein were begun. After considerable difficulty in cross-matching she was given one transfusion. She received ten injections of Stilbamidine of 150 mg. each. Additional symptoms were a 15 pound weight loss, continuous roaring in the left ear for a year, progressive impairment of vision, several bouts of spontaneous epistaxis and an increased tendency to show ecchymoses. In December of 1946 she began to have menorrhagia and metrorrhagia which has continued unabated. She also had noted sternal tenderness for three or four months.

On physical examination, temperature was 36.5° C., respirations 24, pulse 90, and blood pressure 120 70. In general she appeared to be a tanned but very pale woman somewhat younger than the stated age of 42. Skin and mucous membranes were pallid. Examination of the eyes revealed some impairment of vision. Prominent veins, scattered punctate hemorrhages and a few flame-shaped hemorrhages were found in the fundi. There were several discrete small lymph nodes in the post-cervical and supra-clavicular regions. The heart was enlarged one centimeter to the left of the midclavicular line. The spleen was palpable two finger-breadths below the left costal margin. The right kidney was easily palpable. Pelvic examination was negative. The skeletal system showed only sternal tenderness. Percussion of the extremities, ribs, skull, and pelvis did not elicit pain.

The red blood count was 1.41 million, hemoglobin 20 per cent (3 gm.), white blood count 5,300 with a normal differential. The smear showed marked hypochromia, a tendency toward anisocytosis, and occasional erythroblasts and normoblasts. The platelet count was 200,000. The bleeding time was 17 minutes, coagulation time 4 minutes. The urine contained Bence Jones protein. PSP excretion was less than 20 per cent in two hours. NPN was 70 mg. per 100 cc. blood. The serology was negative. The stool contained occult blood. The prothrombin time on entry was 29 per cent. The serum proteins were 9.48 gm. per 100 cc. of blood with albumin 2.25 gm. and globulin 7.23 gm. The only significant finding in the x-ray films was a rarefaction in the upper end of the right femur. Chest and skull films were normal except for slight cardiac enlargement.

The patient was given a diet low in animal protein, daily injections (150 mgm.) of Stilbamidine, Vitamin K, iron and blood transfusions. After a week of Vitamin K therapy, the prothrombin was only 31 per cent as compared with the preceding 29 per cent. The hemoglobin rose to 70 per cent; the NPN dropped to 60 mg. per 100 cc. A bromsulphalein test was within normal limits.

Dr. Stacey Mettier†: One may question the diagnosis on history in this patient because it is not that which we usually see in patients with a characteristic multiple myeloma. The onset of illness has been rather insidious, finally leading up to a point where the patient goes to a physician because of symptoms referable to the anemia. In most cases of multiple myeloma the patient comes to the physician because of excruciating pain. The pain in multiple myeloma may be experienced by the patient in different parts of the body. On occasions, the diagnosis of rheumatic fever may be made because the pain migrates from one part of the body to another, and in these locations is associated with bone tenderness. Pain has not been an outstanding factor in this patient's illness. Another mode of onset is characterized by fracture of a bone. We have seen that happen to an individual who prior to the accident had been apparently well, when, suddenly, a slight injury, a misstep, or a fall has led to the fracture of an arm or leg, or the ribs.

The third type of onset is characterized by a hemorrhagic tendency. This patient has exhibited some tendency to bleed. I can't explain that clearly because we do not have the decrease in the platelets that one usually gets in association with the bleeding of multiple myeloma. She has a prothrombin deficiency, which offers opportunity for considerable speculation because we don't know how to account for it. Apparently her liver function is within normal limits. It may be that she is not absorbing Vitamin K from the intestinal tract. However, that is a side point and could be discussed at further length. So, there are certain things here against the diagnosis of multiple myeloma on the history alone.

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On physical examination, one would expect again to see a patient who exhibits suffering. I don't think there is any pain worse than bone pain, and especially that seen in multiple myeloma. At times it is difficult to control with large doses of narcotics. Bone tenderness is absent here except over the sternum, which is slightly in favor of multiple myeloma. Lymphadenopathy is found only in a very small percentage of patients in whom the spleen is palpable. Dr. Lowenhaupt recently published a paper showing the presence of the myeloma cells in the spleen. Occasionally they are found in the liver. On roentgen examination, we should expect to find multiple areas of decreased density in the bones if the illness has been present for a prolonged period of time as it has been here. We find one questionable area in the femur.

As far as laboratory diagnosis is concerned, one would say, "Well, we will establish the diagnosis on finding Bence-Jones protein in the urine." But I may assure you that Bence-Jones proteinuria may be found in other conditions, especially those where there is a space-consuming lesion in the bone marrow, and therefore that is not absolutely positive in establishing the diagnosis. The second most important laboratory procedure would be that of the hyperproteinemia, especially the globulinemia which is tremendously increased in most patients with multiple myeloma. There is no relationship between Bence-Jones proteinuria and the increased globulin content in the blood. There may be a high globulin content in blood plasma and not Bence-Jones protein in the urine. However, the combination of the increased globulin and Bence-Jones proteinuria again points toward a probable diagnosis of myeloma.

We may establish the diagnosis if we are lucky enough to procure myeloma cells in the sternal puncture. Preferably, we should do a sternal biopsy. In carrying out either one of these procedures, I wish to warn enthusiasts that this may be a very serious diagnostic procedure in a patient who has involvement of the outer plate of the sternum. In the presence of decalcification, the sternal plate may be very brittle and one may go through very readily either with the needle or with the scalpel.

This patient shows the presence of some abnormal cells in the bone marrow. I don't think they have been found in the peripheral blood. What are we going to call these cells? I would like to make a few more comments at this point concerning the type of cell that one finds in this peculiar disease. There are many who choose to call it a plasma cell because it does resemble the plasma cell that one finds normally in the tissue. If one does enough sternal punctures and examines the tissue, he may find a cell 10 to 12 micra in diameter. It is slightly oval in outline with a small eccentric nucleus. It has a so-called radiation of chromatic material, which is rather densely stained, and a clear greenish-blue cytoplasm. It is called a plasma cell. When one finds 5, 6, or 7 per cent of these cells in a specimen, does that constitute a diagnosis of multiple myeloma? I should say not necessarily, because at times we can see them increased under the strain of infection. However, there is a type of cell that is considerably larger than this one and may attain a size of 18 to 20 microns. The nucleus, again, is eccentric, but is larger in proportion to the amount of cytoplasm that is present. The nucleus takes a very deep, purplish stain that is almost pyknotic in character. It does not have the radiations one sees in the plasma cell. The cytoplasm is quite similar, but if you focus up and down on the cytoplasm very carefully, you may see that it appears almost vaculated with very tiny areas in which there is an absence of the stain.

Now, let's call this cell a myeloma cell in contrast to the plasma cell which is normal. Since we are speaking about this cell, the question arises as to its origin. If it is related to the plasma cell, one would expect to find a frequent occurrence of this tumor in lymphoid tissue. There are very few cases on record where myeloma cells have been reported in lymphoid tissue. Jackson and Parker reported a case in which there was involvement of lymphoid tissue in the tonsils. They felt they had a case of myeloma that was limited entirely to lymphoid tissue. I am reminded of one patient we had here a few years ago where we had involvement of the lymph nodes in the groin. But lymph node involvement is a very rare occurrence primarily in multiple myeloma. So it brings us back to the blood-forming tissue in the bone marrow.

Should we have suspected the presence of myeloma in this patient prior to the time that she came for her first examination by a physician? If a blood count is taken and the physician should go to the laboratory himself and examine the blood films, he might be struck by the type of anemia. It is usually normocytic and normochromic. There may be a depression of the platelets.

There is no specific therapy for multiple myeloma. We are disappointed in the use of roentgen irradiation, in irradiated phosphorous, and other forms of irradiation. Recently, we heard of Stilbamidine. I refer you to the article by I. Snapper, which appears in the Journal of the Mt. Sinai Hospital for September, 1946. It was learned that in kala azar, a disease in which the plasma globulin is high, administration of the material to the patient has a beneficial effect. Snapper reasoned that if it is effective in conditions with high blood protein it might have some effect on patients with increased globulinemia such as in multiple myeloma. In 1945, Dr. Snapper started treatment on a group of patients. He found favorable results in nine out of fourteen and no effect in five. The effect demonstrated was a relief of pain and a disappearance of the myeloma lesions in the bones which subsequently became calcified over a period of six months to one year. There was no effect on the Bence-Jones proteinuria; there was no reduction of the plasma globulin, but he felt justified in making his report simply on the basis of the relief of pain in the patient.

Clinical-Pathological Conference*

A white, female, aged 39, was admitted to the Los Angeles County Hospital on October 21, 1946, because of epigastric pain, nausea and vomiting, and jaundice.

The patient stated that she first had had abdominal pain in 1943. This occurred in the form of recurrent attacks of acute colicky pain in the right upper quadrant of the abdomen. The pain was severe, would cause her to "double up" and lie quietly in bed. The attacks would last several hours, frequently requiring medical attention and a "hypo" for relief. There were no associated chills, fever or jaundice. The attacks which were at first monthly became more frequent and would occur every several days. In January of 1944 a cholecystectomy was done at another hospital, and the patient was given 14 small dark green pea sized stones as souvenirs.

Following this operation the patient was generally free of pain until six months ago. About that time she began to have attacks of epigastric pain. These were described as frequently recurring, dull aching pains, starting in the epigastrium, spreading to both upper quadrants, and radiating to the upper anterior chest and breasts. These attacks would last several days and recur every two or three weeks. In addition there were also irregular attacks of sharp, stabbing pain in the right upper quadrant. Nausea and vomiting were associated with the pain during the attacks. Five days before admission to the hospital she noted onset of jaundice.

Past History: Patient had measles and mumps in childhood. At age 16 patient had an attack of jaundice, with fever, lasting one month. The same year she had an operation for uterine suspension and right salpingo-oophorectomy.

System Inquiry was negative, except for productive cough (scant mucopurulent sputum) for about one year.

Habits: Heavy drinker for about five years. The exact volume and type of alcohol was not known, since the patient would admit to nothing more than "she had drunk too much."

Physical Examination: Patient was thin, jaundiced, and appeared chronically ill. Temperature was 99 degrees F. Spider angiomata were noted over the anterior chest. The lungs were clear; heart not enlarged and no murmurs were heard. B.P. 106/66. Abdomen was not distended. Scars of two previous operations were noted. Liver edge was down to umbilicus and tender. Spleen and kidneys were not palpable. No edema was noted.

LABORATORY DATA

October 21, 1946. Hb. 8 gms.; w.b.c. 7,200; polymorphs 74 per cent; lymphocytes 26 per cent. Icterus index 50.

October 23, 1946. Urinalysis: Sp.gr. 1.013; pH 6.0; color deep brown; sugar negative; albumin trace; bile 4 plus; urobilinogen negative. Serum albumin 2.9 grams. Globulin 3.0 grams. Blood Wassermann negative.

October 25, 1946. Blood sugar 126. NPN 33. Thymol turbidity 3 units. Cephalin flocculation 1 plus in 24 hours—3 plus in 48 hours.

Course: The patient's condition was poor throughout her short period in the hospital. She vomited all food given. About two days after admission she became disoriented and later lethargic. Her jaundice deepened. She was treated with intravenous glucose, protein milk (by tube), vitamins, crude liver extract (5 cc. I.M. b.i.d.) and choline (choline hydrochloride 4 grams t.i.d.). She died in coma five days after entry to hospital.

CLINICIAN'S DISCUSSION

DR. SNELL*: In the case which I have been asked to discuss the principal interest lies in the familiar problem of whether or not pain and jaundice are due to biliary obstruction or to primary hepatocellular disease. Decision on such a problem is frequently difficult and this case is no exception, particularly since the patient was seen only during the last days of her illness.

A review of her history brings out three etiologic factors of importance. The first has to do with the illness which the patient had in 1916. This may well have been infectious hepatitis. It is presumed that most patients make a complete recovery, but the experiences of the past few years have clearly indicated that a small minority carry some permanent residues. There is nothing in the history or findings, however, to warrant the suspicion that this earlier illness was responsible for the presenting situation. The second factor has to do with the abuse of alcohol. It is known that the patient drank heavily for five years, a long enough time to produce definite liver injury which might be either a fatty type of liver or an actual cirrhosis.

The third important consideration has to do with the previous history of disease of the biliary tract. Apparently, the patient had typical biliary colics in 1943 and in January, 1944, which were not attended by jaundice, chills or fever. At operation stones were found in the gallbladder. One would, of course, like to know whether or not the common duct was opened and whether the pancreas and liver were carefully examined for signs of disease. It is entirely conceivable that a stone might have been present in the common duct: the fact that there had been no jaundice previously does not exclude such a possibility. The liver may have been grossly normal and yet microscopic examination, if it had been done,

* One of three Clinical-Pathological Conferences held at the 76th Annual Session of the California Medical Association, April 30-May 3, Los Angeles.

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might have disclosed evidences of disease. I cannot say the same thing about the pancreas. Usually, pancreatic disease of a degree sufficient to cause symptoms may be recognized grossly at operation. What the findings at operation may have been can only be surmised. At any rate, the patient remained well for more than two years after operation. In spite of this interval of freedom from symptoms it is reasonable to suspect the presence of some residual disease in or about the biliary tract.

About all that is known of the present illness is concerned with the feature of pain. It appears to have been of a different type than that which the patient suffered before cholecystectomy. It was more diffuse, more persistent and apparently was not a true colic. Although pain associated with stone of the common duct may be atypical in its characteristics or distribution, it usually manifests some features of biliary colic. This story suggests a different type of process. Could it have been due to liver injury? A categorical answer cannot be made, but it is certainly unusual for the pain of primary liver disease to persist over so many months without some other features of hepatic insufficiency. The distribution of the pain and its chronicity suggest a pancreatic origin, but, unfortunately, we have no data in the record which would help us to incriminate this organ as a site of disease. I believe, however, that the painful features of the disease which preceded the appearance of jaundice are sufficiently characteristic to indicate that there was biliary obstruction of some type prior to her last illness.

Physical examination was not very helpful except in respect to the spider nevi which are described as being present. These are now believed to be almost a trademark of primary hepatic disease and are only rarely seen in patients who have obstructive jaundice. Spider nevus occasionally develops in an individual who has stricture of the common duct of long duration; stones or neoplasm rarely produce them. Their presence in this case, may, I think, be taken to indicate that the patient's liver has been affected by a process other than simple biliary stasis. The size, consistency and tenderness of the liver are incidentally not particularly specific.

The laboratory data present some features which support the idea of primary hepatocellular injury. The anemia is much more than that usually seen in uncomplicated biliary obstruction. There is no data on the character of the erythrocytes, but one would be safe in assuming that some macrocytosis is present. The reduction in level of serum protein and the changes in the albumin-globulin ratio taken together with the weakly positive results of the thymol turbidity and cephalin-cholesterol flocculation tests also are factors which point to a diagnosis of primary liver disease. Only one bit of laboratory information backs up the earlier statement in regard to biliary obstruction. This, of course, is the absence of urobilinogen in the urine. I am not sure whether the test was done on a single two-hour sample of urine or on a larger specimen. The report on urobilinogen lacks confirmation but it seems important nevertheless.

Undoubtedly, much more study would have been required in this case to make an accurate diagnosis. A quantitative study on the urobilinogen in the stools and urine would have been needed. A duodenal drainage and studies on the blood lipoids likewise might have been helpful. Finally, a search for an excess of pancreatic enzymes in the blood, or roentgenographic studies of the upper part of the abdomen in the hope of demonstrating shadows of stones would have been of decided value. The patient's condition precluded detailed laboratory studies and therefore I can do no better than hazard a diagnosis on the basis of the available data.

It is my opinion that the patient had two lesions; one was biliary obstruction which might have been due to stone, pancreatitis or tumor in about that order of probability. In addition, I am fairly certain that necropsy also will show primary hepatocellular disease of some type. I am basing my conviction here on the spider angioma and the patient's history rather than on the equivocal laboratory data.

DISCUSSION BY PATHOLOGIST

DR. TRAGERMAN*: At autopsy there was still evident jaundice and poor nutrition. No significant abnormalities were noted in the heart or major blood vessels examined. A small pleural effusion was present on both sides. The lungs were of moderately increased weight, which was due to moderate edema of the lower lobes. No gross areas of consolidation were present. The middle lobe of the right lung was congenitally absent.

The principal and important findings were, of course, in the abdominal cavity, particularly in the liver, pancreas, and associated ducts. No significant abnormality was noted throughout the gastro-intestinal tract. The gall bladder was surgically absent, as were the appendix, right Fallopian tube and ovary.

Interesting, and no doubt clinically important, lesions were present in the pancreas. The head of the pancreas was firm and enlarged. Its cut surfaces were firm and gritty and showed numerous small hemorrhagic cystic areas. These frequently contained small calculi. Subsequent chemical analysis showed these calculi to consist largely of calcium carbonate and calcium phosphate, with the former predominating. No cholesterol or uric acid were present. The body and tail of the pancreas were not enlarged and appeared rather fibrous. Bordering on the posterior surface of the pancreas there was a thick walled cyst which averaged 3.5 cm. in diameter and contained some clotted blood. The lining of the cyst was smooth but gritty suggesting the possibility of underlying calcareous deposits.

The duct of Wirsung was considerably dilated and averaged 1 cm. in diameter. Gray-white firm stones were present throughout its length. In addition, a

* L. J. Tragerman, M.D., Department of Pathology, Hospital of the Good Samaritan, Los Angeles.

collection of similar stones was found impacted in the terminal portion of this duct. These stones were externally green-black in color and centrally white. The duct of Wirsung was found to have a separate opening into the duodenum. However, the greatly dilated stone-bearing terminal portion of this duct produced distinct compression and partial stenosis of the adjacent common bile duct.

The other organ showing major disease was the liver. It was greatly enlarged, weighed 2,650 grams and its lower edge extended 4 cm. below the right costal border. Its external surface was smooth and slightly irregular. The cut surfaces were firm, green yellow, with prominent lobular markings. Gross nodularity was not noted. The gall bladder bed was occupied by dense fibrous tissue which formed firm adhesions to the adjacent duodenum. The common bile duct was considerably dilated in its upper portion. This dilation was due to the partial stenosis produced by the calculi in the adjacent pancreatic duct as above described. The duct opened separately into the duodenum.

The spleen weighed 90 grams and showed no gross abnormality. The kidneys together weighed 260 grams and apart from bile staining were not grossly remarkable.

Microscopic Examination: The histologic alteration in the pancreas was striking. The basic lobular pattern was distorted and in some areas completely destroyed. The principal changes were fibrosis, cyst formation, prominence, distortion and dilation of ducts, and the presence of varying degrees of chronic and subacute inflammation. All the above changes were more marked in the head than elsewhere in the pancreas. The fibrosis was both perilobular and intralobular. The pancreatic islets were generally not involved. The inflammatory exudate was largely mononuclear and occurred mostly about small ducts, particularly where the epithelium had disappeared. Within the shrunken lobules, the dilated ducts formed prominent, often cyst-like spaces. These contained variably stained, amorphous and cellular debris in which inflammatory cells were mixed with desquamated epithelium. Foci of calcification were frequently noted within these dilated ducts. Occasionally, foci of acute inflammatory change were also noted in the interstitial tissue, generally adjacent to a small dilated duct. No areas of fat necrosis were present. No evidence of epithelial metaplasia was noted.

In the liver there was widespread fatty change which almost obliterated normal lobular structure. Many of the liver cells appeared completely replaced by fat. In addition to the intense fatty change, slight focal proliferation of periportal connective tissue was noted.

The anatomical diagnoses were: Chronic pancreatitis; pancreatic calculi; fatty liver with early subacute cirrhosis; partial obstruction of common bile duct by extrinsic pressure of stones in duct of Wirsung; pancreatic pseudocyst; surgical absence of gall bladder, appendix, right Fallopian tube, and ovary; congenital absence of middle lobe of right lung; pulmonary edema; jaundice.

The major clinical findings presented by the patient would appear readily explainable by the pathological findings. It appears certain that the early abdominal pain which the patient had (1943) was due to gall bladder disease. Whether this explains the episode of jaundice at age 16 is unknown. The disease present in the liver was of the type seen not infrequently in cases of chronic alcoholism and malnutrition. The immediate cause of death was hepatic insufficiency. There remains to be explained the episodes of pain described during the last six months of life. It is possible, as Dr. Snell has indicated, that liver disease per se may have been responsible for the pain. However, we are more inclined to believe that the upper abdominal symptoms (plus the jaundice, in part) presented by the patient were due to the chronic pancreatitis and pancreatic calculi. Thus, as indicated by Dr. Snell, two separate major diseases were present in the patient, both contributing to the patient's clinical picture. From a pathological point of view, this case was of interest chiefly because of the presence of the unusual and severe pancreatic disease. It was selected from a group of cases of pancreatic calculi which were collected from the autopsy records of the Los Angeles County Hospital by Drs. Edmondson and Bullock, and reported elsewhere at this meeting. Pancreatic calculi are rare but the underlying pancreatic disease may be much more common than suspected. The incidence of pancreatic calculi detected at autopsy was 22 cases in 35,000 autopsies. It is of interest that eight of these 22 cases had fatty livers and that all eight of these had history of alcoholism. Thus it does not appear too surprising that the two conditions existed in the same patient, as in this case. By the same token, it does not appear possible to ascribe the fatty change in the liver to the presence of pancreatic disease.

Dr. Snell: The association of an extensive fatty type of cirrhosis with pancreatic stones and chronic pancreatitis is of unusual interest. The question of a specific lipotropic substance in normal pancreas, the absence of which causes fatty metamorphosis of the liver, has been discussed pro and con for years. I have seen and recorded two similar cases; in both instances the patients drank heavily and it is not certain whether the diminution in size of the liver noted after treatment was due to the administration of the lipotropic agent (lipocaic) or abstinence from alcohol.

This is a most instructive case; it is interesting to compare the pain which the patient had with that described by Comfort and his associates in their recent review of a large series of proved cases of pancreatitis, with and without stones. In this patient a roentgenogram of the upper part of the abdomen would have demonstrated these very opaque stones and made the diagnosis. Whether studies of pancreatic enzymes in serum would have been helpful is debatable, since the pancreatic cells were so completely destroyed.

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NOTICES AND REPORTS

Reports of C.P.S. Officers to Administrative Members

Following are the reports made to the administrative members of California Physicians' Service, meeting in Los Angeles, April 30, 1947, by Dr. Lowell S. Goin, president of the Board of Trustees of C.P.S., Dr. Chester L. Cooley, secretary, and Mr. W. M. Bowman, executive director.

* * *

DR. GOIN: I am delegated by the By-Laws of the California Physicians' Service as your President to address you. I shall not trouble you with very many remarks. Immediately thereafter you will hear from the Secretary of the Service and from its Executive Director who reports on the progress of the California Physicians' Service during the past year and I am sure you will be very much impressed with the progress that has been made. This progress is due in no small measure to the efforts of the administration but primarily it is due to the increasing interest and cooperation of the doctors of California. My few remarks are directed towards increasing and continuing that interest and that support from the doctors of California in behalf of the California Physicians' Service. I yield to no one in any way that we do not continue the practice of medicine as we have known it in the past and that we could remain the family physician and friend and the advisor of the sick man and his family; that we could continue to administer medical care on the fee-for-service method as it has been given for so many years. Unfortunately, the social order changes. Whether for the better or the worse remains to be seen but certainly it changes.

The magazine *Fortune*, about two years ago last December, had an article on the problem of medical care. I think you would all agree that *Fortune* is by no means a left wing sheet. It is a big, expensive magazine and it is devoted to big business. If you haven't read the article, I commend it to you.

In the article the writer makes this statement.

"Medical care has become a problem in America because the conscience of America has made it one." I don't believe that anyone could contemplate the earnest attempts that have been made in the past fifteen years to enact health insurance legislation or read the vast amount of literature that has appeared on the subject and remain convinced that there is no problem of medical care. For myself I am prepared to concede that there is a problem. I agree that the distribution of doctors is not ideal, and that there are areas in the country where good medical care is difficult to obtain; that the cost of medical cares are totally unpredictable and that frequently it falls with a catastrophic effect upon individuals and families very ill-prepared to receive them.

Now, social reform to the contrary, the fact is that the nation's health is in an admirable state. We are the healthiest people in the world. Our morbidity and mortality rate is declining steadily. Our longevity and life expectancy increases constantly. To achieve these miracles the doctors of America have given freely of themselves without regard to the ability of the patient to pay. Those who would have America believe that ability to pay is the criteria for health and that the poor man who is ill would receive no medical care are either totally ignorant or for reasons of their own are uttering malicious nonsense. Nevertheless, I greatly fear that we are approaching the end of the era in which we have administered medical care on a fee-for-service basis. This is not because we have failed with our task. It is because the scope of our science is becoming so vast and because our knowledge of it is becoming so complex that if we are to apply for the benefit of the sick the knowledge that we now possess, the costs of medical care must necessarily rise, frequently to the point

where they are unsupportable by the average person. If this be true, we have two possible alternatives remaining to us. We can have the government administer medical care either by a nationalized medical service such as is now taking shape in Great Britain or by some form of compulsory health insurance, or we can ourselves in the American tradition administer medical care through voluntary prepaid medical care plans.

I need not take up your time to dwell upon the evils of compulsory health insurance. All persons I think agree that is a bad way to administer medical care. It has an effect upon the public immediately and it is a bad one and not a good one. I feel perfectly sure that I am right when I say that 95 per cent of the doctors in California, and probably 95 per cent of the doctors in America, abhor the idea of compulsory health insurance.

We then have left to us the voluntary prepaid medical care plan of which the California Physicians' Service is a prototype. These plans are not very old. If we disregard the fact that lodges and unions and plants of various sorts that have had medical care plans, ranging from lodge doctors to the fully employed doctors in the plants for quite a long time, then we can say that medical plans as we know them now arose in the country in about 1939.

Since that time their growth has been perfectly phenomenal although they are still in their infancy, and there are now more than 70 plans in all but three of the states in the Union and these states are working diligently to erect such plans. These plans give good medical care and they give it at the price that people can afford to pay and they give it without regimentation, bureaucracy or interference of the government. And it is our duty, if we wish to avoid the horrible spectacle of compulsory health insurance, regimentation, bureaucratic regimentation of every detail of our life and professional practice to give every ounce of support we can to the voluntary prepaid plans of America, to see that they are played to success.

It is true there are many shortcomings. It is true that there isn't one that hasn't some fault to find and there isn't one of you, including myself, who hasn't had difficulty in collecting for his work, although our claims are properly made. But beyond that, how trifling these ill effects are compared to what would be the case had you to deal with a state bureau!

Yes, I can say to you this, that our future awaits our making. We can shape it into a form that is not abhorent to us, to one that we can accept without violating our professional scruples, if we can only deal loudly and strongly now while the future is still malleable. The destiny of man can still be altered by the ways of men. The future is not a fixed pre-determined thing but remains malleable. Until that moment that it becomes history it remains malleable. Until that time, we have still to save our profession from the evils of regimentation and bureaucracy.

REPORT OF THE TRUSTEES TO THE ADMINISTRATIVE MEMBERS OF C.P.S.

DR. COOLEY: Mr. President and administrative members of California Physicians' Service: This will serve to supplement the report on C.P.S. appearing in the Pre-Convention issue of CALIFORNIA MEDICINE. In reporting to you as Secretary of the Board of Trustees of California Physicians' Service, I should like to review for you the men who are responsible for the operations of C.P.S. The trustees and officers are:

Dr. Lowell S. Goin, president, Los Angeles.
Dr. A. E. Moore, first vice-president, San Diego.
Dr. H. Randall Madeley, second vice-president, Vallejo.
Dr. Chester L. Cooley, secretary, San Francisco.
Dr. Robertson Ward, treasurer, San Francisco.
Dr. Donald D. Lum, assistant secretary-treasurer, Alameda.
Mr. Ransom M. Cook, San Francisco.
Dr. C. Glenn Curtis, Brea.
Dr. J. Frank Doughty, Tracy.
Dr. P. K. Gilman, San Francisco.
Mr. C. Ray Miller, Los Angeles.
Dr. C. L. Mulfinger, Los Angeles.
Rt. Rev. Msgr. Thos. J. O'Dwyer, Los Angeles.

Many of you will remember that at last year's annual meeting, 16 recommendations of the Chandler Committee were approved by the administrative members. Later these recommendations were reviewed by the trustees and by the administration of C.P.S., and all but two were put into effect immediately. These two I should like to explain.

Recommendation No. 8 was that a C.P.S. beneficiary member with an annual income exceeding $2,400 and who had no dependents, or a member having dependents but whose income exceeded $3,000, might be billed by the physician treating him for the difference between the physician's usual fee and the amount allowed by C.P.S. for the service. During the year the administration has spent considerable time compiling figures on income and wage levels in California. Recently figures presented to the board and approved by both management and labor indicated that in 1946, 57.2 per cent of California's population earned less than $3,000, and 42.8 per cent earned more. The question of income ceiling is a highly important one to future membership growth in C.P.S., as any lowering of the ceiling is bound to hamper enrollment. Because of this, the problem of income ceiling is one of the most controversial issues facing C.P.S.

It is interesting to note that in connection with the recent increase in dues, a number of groups raised the question of income ceiling, stating that if a 25 per cent increase was to be made in rates, there should also be a 25 per cent increase in the income ceiling.

A further recommendation of the Chandler Committee which has not been put into effect was that concerning relations with the Hospital Service As-

sociations. The Chandler Committee recommended that if C.P.S. and the Hospital Associations could not agree on a unified program within 90 days, C.P.S. should proceed to provide state-wide hospital care as well as medical care. Throughout the year, C.P.S. has been assured repeatedly that the three Hospital Associations were working together on an integrated program. On March 9 it was reported to the board that while the three Hospital Associations had agreed on uniform rates, fees, hospital charges, etc., there were no new developments toward a formal merger.

The Chandler Committee had recommended that the board of trustees be enlarged from 11 to 15 members, including four lay business executives, and a change in the By-Laws was approved by the administrative members. To date, two of the vacancies thus created have been filled, it being the conviction of the board that care must be exercised to assure the selection of interested and competent laymen.

Some recommendations of the committee did not require direct action on the part of C.P.S. For example, Recommendation No. 7 provided that the C.P.S. Fee Schedule be revised biennially by a committee appointed by the Council of C.M.A. The Council appointed such a committee, under the chairmanship of Dr. William Bender, who appeared at one meeting of the Board. The administration has given Dr. Bender a considerable volume of material accumulated on the Fee Schedule.

With these exceptions, the recommendations of the Chandler Committee have been put into effect insofar as is within the power of the Board of Trustees and the administration. The single recommendation which has brought the most criticism from the profession is Recommendation No. 5, under which the Board was authorized to reimburse services rendered to beneficiaries by physicians and surgeons who are not C.P.S. physician members. While popular with beneficiaries, this recommendation has aroused considerable resentment among physician members. C.P.S. has received a large volume of correspondence complaining of this action, and the question has been raised at most of the county society meetings attended by C.P.S. representatives. Many physicians feel that during the formative years they supported C.P.S. at a low unit value, some of them at a considerable financial sacrifice. As a non-member physician need not accept C.P.S. payment as his total fee, the member physician feels he is penalized for his membership.

Recognizing the problems which accompany rapid growth, the administration of C.P.S. had long felt the need for a survey by an outside agency, to review methods and procedures used by C.P.S. and to determine whether these would hold good with a membership, say, of 500,000 or 750,000.

After interviewing a number of management consultants and individual actuaries, the firm of McKinsey and Company was selected—a management consultant firm with a national reputation. Representatives of this firm spent two months working in the C.P.S. offices with various department heads. In their final report, which many of you may have seen, McKinsey and Company stated that the two most significant factors responsible for problems in C.P.S. were the tremendously rapid growth of the organization, resulting in overcrowded working conditions—which has since been remedied—and the relative newness of this type of activity, which means that there are few business precedents applying to many phases of C.P.S. operation, some of which are unique. The report recommended certain specific changes; some of these are now in effect, others are being studied by the administration. "In general," stated the report, "we feel that the organization is basically sound as set up and in accord with accepted business practices."

Although this survey had been made by the administration in the interests of internal efficiency, copies of the final report by McKinsey and Company were made available to the C.M.A. Council as a matter of information. At the Council meeting on March 16, the following resolution was unanimously adopted and forwarded to the C.P.S. Board of Trustees:

"*Resolved*, That it is the sense of the Council that the obligation of the Council of the California Medical Association to secure a survey of the business methods and operations of California Physicians' Service has been fulfilled by the survey of California Physicians' Service recently made by McKinsey and Company."

Since the annual meeting of last year, the Board has held seven meetings. Because of the tremendous volume of business to be accomplished at its meeting, the Board on March 9 decided to resume monthly meetings.

At its organization meeting, held directly after the adjournment of the administrative members' meeting last year, the Board elected officers, and also elected its first new lay trustee, in accordance with the Chandler Committee recommendation and the subsequent By-Law amendment adopted by the administrative members. The first new lay trustee elected was Mr. C. Ray Miller, a realtor from Los Angeles County. A second lay trustee, Mr. Ransom Cook, vice-president of the American Trust Company, has since been elected by the Board.

At its second meeting, the Board heard Mr. Anson Herrick, certified public accountant, report a considerable improvement in the accounting, records and administrative procedures of C.P.S., and compliment the administration on the improvement. At this meeting it was reported to the Board that the Alameda County Medical Association had unanimously adopted a resolution providing that its members sponsor and support C.P.S. Also at this meeting the trustees reviewed the recommendations of the Chandler Committee, and took steps to implement the recommendations.

At its meeting on September 22, the Board was advised of the decision in favor of C.P.S. handed

down by the California Supreme Court in the case of C.P.S. versus the Insurance Commissioner, thus ending some six years of litigation. The opinion covered the entire field of C.P.S. Hospitalization was mentioned only briefly, but in such a way that there could be no question that hospitalization was considered to be an adjunct of medical care.

At this meeting the Board was advised of the heavy utilization of service by beneficiaries, and promptly approved a raise in rates. Studies completed by the administration show that 60.4 per cent of all service costs occur within the first year of membership, reaching their peak when the contract has been in effect between three and four months. In conjunction with the rate raise, a one year's waiting period was instituted on all groups enrolled after October 1, 1946, for the care and treatment of tonsillectomies and adenoidectomies, hernias, hemorroidectomies and varicose veins. These waiting periods apply to medical, surgical and hospital care for these conditions. It should be noticed that the rate raise and the waiting periods were initiated by the Board immediately upon notification by the administration of the condition existing.

In line with the Chandler Committee recommendation that the profession be kept informed of operating procedures and the financial status of the administration, members of the Board and of the administration have appeared at County Society meetings throughout the state, describing the development and problems of C.P.S., explaining the Commercial and Veterans' Programs and answering questions. To date practically all of the societies have been contacted, and a great deal of interest shown. The Board of Trustees strongly urges that, following the recommendation made by the Council of C.M.A. some time ago, each county society set up a liaison committee to work closely with C.P.S. and to help keep its members informed.

Representatives from C.P.S. appear at every meeting of the C.M.A. Council, and after their last meeting the Council unanimously adopted a resolution expressing their appreciation to the trustees and the administration for the progress report submitted to the Council by C.P.S.

C.P.S. also prepares articles each month for publication in California Medicine and in the county society bulletins. In addition, you have recently received your first copy of C.P.S.'s new bulletin, which is to be a quarterly, designed to inform the profession on developments in C.P.S.

As I reported to you last year, the contract between C.P.S. and the Veterans' Administration for the care of service-connected disabilities by the veteran's own physician in his own home town has a potential of between $5,000,000 and $10,000,000 a year. There are some 1,350,000 veterans in California. During the period from April to September, 1946, the average monthly cost per case under this program was $21.41. It must be borne in mind that the amount of federal funds encumbered under this program represents government money which would not otherwise have reached physicians in private practice. We feel that the physicians of this state are most fortunate in having developed an organization which the Veterans' Administration could contract with and work with.

We are distributing to you a balance sheet on the Veterans' Program, and as soon as you have all had this, I will be glad to explain it.

If you all have a copy of this balance sheet, I will go on then and come back to it in a minute.

There are of course still some wrinkles in the program to be ironed out, but a great deal of progress has been made since its inception in April of last year. Red tape, which is regarded as inevitable when dealing with the government, has been minimized, forms have been simplified and procedures speeded up. The California Plan has been repeatedly singled out as the most successful of the plans for veterans' care now operating throughout the country. If payment has been slow, it should be remembered that California was the first state to receive payment on its claims. The administration is working constantly to develop procedures to speed up payment. The Board of Trustees feels that the administration has done a highly competent job and should be congratulated on the development of a program attracting nation-wide attention.

In C.P.S. the medical profession of the State of California has developed a plan which has played an important part in combating compulsory health insurance. C.P.S. statistics alone have proven invaluable in showing just how much medical care can be given for how much money. No other organization in the country has more complete records on the costs of medical care than those compiled by C.P.S. since its inception. In addition to its regular Commercial Program, there are now the statistics being compiled on the Veterans' Program. The Washington, D. C., office of the Veterans' Administration finds it can secure information from C.P.S. which is not available in any other state.

It is the earnest hope of the Board of Trustees that the physician members of C.P.S. will not lose sight of the fact that in C.P.S they have created a powerful weapon, and one which they may wield as they see fit.

If there are any questions on that financial sheet, I will briefly go over it.

On the first of April of last year to December 30, 1946, $365,000.00 was actually paid to the physicians of California; $73,000 has been approved but is in the process of being paid and we have pending authorizations for treatments not completed but it has been approved of $1,132,000.00.

The service costs or liability paid through December 30, 1946, was $438,573.00 which is a combination of the two figures at the top of the page. The accrued for unreported claims, that is, the claims that haven't been finished is $1,029,000.00.

The administrative costs through December 30, 1946, are $81,105.00, and accrued for administra-

tive costs is $25.000.00 which has been set aside for future costs.

The operating deficit over the whole ten months or nine months was $3,318.00 which amounts to about $300.00 a month.

Although we have operated at a loss, if we were to look into this, we must remember that the costs of starting this program were tremendous, the tremendous amount of the literature that was necessary to acquaint the doctors with this program and the medical expense.

We have requested the Veterans' Administration for a 10 per cent overhead cost. We feel that will be granted. As of that date, as of April, approximately $27,000.00 per month has been received from the Veterans' Administration for the care of veterans. When you consider it on a yearly basis, this amount will amount to about $3.000.000.00 per year.

BUSINESS REPORT TO THE ADMINISTRATIVE MEMBERS

MR. BOWMAN: Mr. President and administrative members of California Physicians' Service: It is a pleasure to be able to give you, the 1946-1947 Commercial Program business report of California Physicians' Service. This report is of March 31, 1947, which is the end of our fiscal year, and will cover finances, physician membership, beneficiary membership, as well as other information pertinent to our operations. I am leaving the financial statement until the end of the report, and financial material will be passed out and discussed at that time.

One year ago, May of 1946, there were 6,500 physician members of C.P.S. In the last twelve months, 1,692 other physicians have become members. We now have 8,192 physician members in C.P.S. During the last year our Department of Professional Relations has made over 5,700 calls on physicians' offices. During these calls our personnel gives an explanation on C.P.S. billing forms and contract provisions. We believe that this department is doing an excellent job in keeping the physician and his staff better informed on C.P.S. Our physician relationship throughout the state is steadily improving and C.P.S. beneficiary members are able to secure service in any part of the state.

As Dr. Cooley has reported, talks were given before practically all of the county medical societies in the state, giving them information on C.P.S., its problems and development. We have been able over the period of the last year to speed up the payments to physicians and it is hoped that within a very short time even faster payment can be made.

The Board of Trustees and the administration of C.P.S. were instructed by the administrative members at their last meeting to concentrate their efforts on building a larger and more significant beneficiary membership. This has been done. On January 1, 1946, C.P.S. had 176,886 beneficiary members. Today C.P.S. has a beneficiary membership of 481,122 persons. This figure includes this present month's enrollment. This is an increase of 304,236 persons, or an average net gain of 18,000 persons per month who were placed on our books from January 1, 1946, to and including May of 1947. I believe you will agree that this is a significant membership gain. At this point we would like to express our appreciation to the California Medical Association on the fine job it has done in its Public Relations Program. We in C.P.S. have worked closely with Mr. Hunton and your public relations firm, Whitaker and Baxter, and I can assure you that much of our growth has been due to the fine work you are doing in acquainting the people of California with voluntary health insurance.

During this period, many large key companies in California enrolled in C.P.S. Some of these companies are: Standard Oil of California, Pacific Telephone and Telegraph Company, Rexall Drug Company, Douglas Aircraft Corporation and many other name companies. However, during 1947 the sales departments were instructed to build percentages within existing groups and it is gratifying to report to you that of the members that have been enrolled since the first of the year, two-thirds of these are from existing groups, and only one-third from new groups. In other words, an all-out effort is being made to build higher percentages within existing C.P.S. groups. Building higher percentages is very sound from an actuarial point of view and our experience is now reflecting this.

In my report to you last year, it was pointed out that we were negotiating with the California State Grange. You will be interested to know that over 13,000 Grange members have joined our service and are on record as opposing compulsory health insurance.

I am sure that you all are aware that rapid growth brings on many problems and we have had our share of them during the last year. Some of these problems were: lack of office space, shortage of trained personnel, insufficient office equipment and other operational difficulties. I am glad to say that all of these problems have now been brought under control.

At the Board of Trustees' Meeting held September 22, 1946, the Board was informed by the administration that the present rates to beneficiary members would not allow C.P.S. to pay the full schedule to physicians. Various statistical exhibits were given to the trustees at that time and they voted that C.P.S. should raise its rates to its beneficiary members by 25 per cent. This rate increase was started in November, 1946, and to date approximately 42 per cent of our beneficiary members have received and accepted the increased rates. The rate increase will be fully in effect by November of this year and experience to date under the new rates indicates that C.P.S. hopes to be able to pay the full fee schedule some time early in 1948.

We want you to know that C.P.S. has worked closely with the Legislative Committee of C.M.A. Our Statistical and I.B.M. departments have gathered various financial as well as statistical information which is now being used in Sacramento.

For your information the trustees have authorized the administration to develop a prepaid medical program for the care of indigents. Such a plan could be used by any county in the state.

You will note that in the galleria we have a C.P.S. information booth. We invite each of you to visit this booth and look over our exhibits.

Dr. Cooley has given you a balance sheet of our Veterans' Program. Our Commercial Program fiscal year ends on March 31 and it takes our independent auditors, Lester Herrick and Herrick, approximately two months in which to close the books for this period.

You will be passed out a financial report on the Commercial Program.

In summarizing our operations during the past year, I should like to point out that C.P.S. has made a tremendous gain in membership, going from 176,886 to 481,122 persons; that our physician membership has grown from 6,500 to 8,192; that our financial position is gradually improving. In conclusion, I should like to say that C.P.S. is in much better shape than it has ever been during its existence. By this I mean that our contracts are sound, that our rates are adequate to pay the full schedule to physicians as soon as the rate increase is in effect; that you have a trained administrative staff that can cope with any problem connected with prepaid medical care. The Board of Trustees has been most cooperative and has always assisted the administration in every possible way. The Board of Trustees and the Council of the California Medical Association are being given up-to-date financial and actuarial information as well as other reports pertinent to the operations of California Physicians' Service. We feel that with the support that the profession has given us during the last year, C.P.S. is in a position to do a top-notch job during the next year.

We accepted for no reason at all the month of March for four years and if you will start over at the left-hand corner, you will see the income in March of 1944 was $69,000.00 per month; in March of 1945 it was $162,000.00; in March, 1946, it was $276,000.00; and in March of 1947 it was $620,000.00 per month.

The operating expense of C.P.S. has been criticized in the past. We have received criticism on its high operating costs. These figures include all administrative expense. We have not separated sales or anything else. It is the total amount of expense that has been expended, administrative costs, in March of 1944, $13,000.00 or 19.5 per cent; in March, 1945, $30,000.00 or 19.0 per cent; in March, 1946, $46,000.00 or 16.7 per cent; and in March, 1947, $19,000.00 or 14.5 per cent.

The amount expended for medical care in March, 1944, was $57,000.00; in March, 1945, it was $165,000.00; the next year, $235,000.00; and in March, 1947, $515,000.00.

On that figure for medical care during the month of March, 1947, the percentage was 83.1 per cent. In March, 1944, the percentage was 82.8 per cent; in March, 1945, 101.9 per cent; March, 1946, 85.2 per cent; and then, as I say, in March, 1947, 83.1 per cent.

On excess of income over costs we had a $1,624.00 deficit in March of 1944; in March of 1945, $33,000.00 as a deficit and in the month of March, 1946, $5,000.00 as a deficit and in the month of March, 1947, a profit of $15,000.00.

Now the Stabilization Fund balance: $61,000.00 in the bank in March, 1944, and then we went down to $144,000.00 minus in 1945 and $166,000.00 in March, 1946, which was a deficit and a deficit of $120,000.00 in March of 1947.

Now we have got a little interesting exhibit here and that is that the $61,000.00 represents twenty-seven days' income; the $144,000.00 deficit represents twenty-eight days' income; and the $166,000.00 deficit represents a nineteen-day income; and the $120,000.00 deficit as it is today represents a six-day income.

I should like to point out to you that in the month of April, that is last month, our income was $665,000.00, an increase of $45,000.00 a month over the March figure. This, gentlemen, represents an income of approximately $8,000,000.00 a year for our Commercial Program alone.

The Veterans' Program is producing at this time a $3,000,000.00 a year income; so you have with the two programs, the Commercial of $8,000,000.00 and the Veterans' of $3,000,000.00, approximately $11,000,000.00 in income in C.P.S. today.

An Open Letter To A. M. A. Trustees

Principally because of its reflection upon a problem warranting the earnest regard of all engaged in the practice of medicine, and only incidentally because it lays a shining blade upon the shoulder of the California delegation to the American Medical Association, the following "Open Letter to the Board of Trustees of the American Medical Association" is reprinted from the Rocky Mountain Medical Journal, where it first appeared.

Gentlemen:

The subject of professional public relations, like psychosomatic medicine, is an old fetish in a new dress. The reason for the following discussion is to be found in a report published in the Rocky Mountain Medical Journal, issue of February 1947. A part of that report is reprinted:

A portion of the Rich Report was critical of the National Physicians Committee. One recommendation was that the American Medical Association sever all connections with the

National Physicians Committee. Dr. E. H. Cary of Texas attacked this portion of the report and the recommendation, and warmly defended the National Physicians Committee. . . . Also it was stated repeatedly on the floor of the House that the Rich Associates had never investigated the National Physicians Committee. The Reference Committee recommended that the section of the Rich Report relating to the National Physicians Committee be studied further before adoption. This recommendation was approved by the House of Delegates. Therefore, we should withhold criticism until this very able committee reports the results of its deliberations. However, in spite of Carey's Ciceronian thunder and oratory, which was a cross between Cato and Churchill, this thought persists: Is the NPC tail wagging the AMA dog?

Let it be understood that these friendly complaints are directed toward only one activity, or lack of activity, of the Board of Trustees. There are many things to be said in approbation and praise. No diminution in our admiration for, or loyalty to, the Board of Trustees or to our Association is to be inferred. This is strictly a family affair. We are merely trying to say, "Listen, Dad, you need a haircut and some eyeglasses. And that green necktie does not harmonize with that purple shirt."

We are considering the sequelae of the adverse recommendation in the original Rich Report concerning the National Physicians Committee for the Extension of Medical Service. It is unnecessary to catalog our objections to the National Physicians Committee. That chore is ably and conclusively done by the "Observer" in Vol. XVI, No. 4, April, 1947, issue of the Medical Annals of the District of Columbia, captioned "Too Many Voices Heard," and in the editorial, "Foul Ball," in the Modern Hospital for October, 1946.

The Special Committee on the Rich Report, at the December, 1946, meeting of the House of Delegates, reported: "In line with the new program in the process of accomplishment, this committee feels that the American Medical Association should and must do its own public relations and legislative work." To this committee's statement that there was "lack of documentary evidence relating to the National Physicians Committee," the Rich Associates offered to survey the NPC for five dollars. Authority to carry out this survey was not granted the Rich Associates by the Board of Trustees.

Why? Did the tail wag the dog?

After delaying action on the adverse recommendations of the Rich Report regarding the NPC, and after having dodged a survey by the Rich Associates, and after the resignation of the Rich Associates as public relations counselors for the AMA, a motion was introduced in the House of Delegates at the Atlantic City Meeting in June, 1947, asking the delegates to commend and approve the activities of the NPC. This was a gratuitous and frowning insult. Dr. John W. Cline, Dr. Lowell Goin, and Dr. Herbert P. Ramsey spoke earnestly and convincingly against the motion. It was unnecessary for Dr. Thomas A. McGoldrick to bore the House with a long recital of twice-told tales regarding the virtues of the NPC. The marionettes were seated and Tony Sarg was leaning against a rear pillar ready to pull the strings. The "Ayes" were loud and dutiful. The "Noes" were tense and disgusted. The motion was adopted.

Did the tail wag the dog?

We have learned from a reliable source that the Editor of the Journal made the following statement during or immediately after the meeting at Atlantic City: "Transactions concerning public relations are the business of the Board of Trustees alone. There was no reason to bring up the Rich Report unless the House of Delegates asked for it. Nobody asked. It's nobody's business but the Trustees'. The Rich telegram was not read to the House yesterday for the same reason."

Considering the splendid personnel of the Board of Trustees there is no physician who will believe that such a statement expresses the policies of that Board.

Is the Editor entitled to speak for the Board of Trustees?

Does even the stub of a tail wag the dog?

If the American Medical Association is to remain great and to become greater, it cannot afford the handicap of a trigger-man, a goon or a bodyguard in the guise of the National Physicians Committee or of any other organization.

The Rich Associates were accused of violating a confidence. A certain individual who is considered to be unfriendly to our Association was permitted to read the original Rich Report after it had been delivered to the Board of Trustees and after it *should* have been presented to the House of Delegates at San Francisco in July, 1946. In reading and rereading that report we find nothing to justify holding it as "Top Secret." It is a frank survey of the public relations status of the American Medical Association by unprejudiced experts. It was copyrighted eventually and became a public document. There is nothing in it of which we should be ashamed and much in it which should excite our pride. It should be a matter of vast satisfaction that we wanted to discover our shortcomings in order that we might eliminate them. Therefore, is it important when or whether this report was read by Michael Davis or Jeff Davis or Bette Davis or Kilroy? Let us try to act grown up and let us not be blinded by an obviously planned smoke screen!

That brilliant Frenchman, Emile Zola, in righteous wrath at the unfairness of the Dreyfus trial, wrote his famous letter, "*J'Accuse.*" It is not given to the relatively cold Anglo-Saxon mind to rise to heights of Gallic exasperation. But, let us try:

Mr. President:

I accuse the Board of Trustees of shameful procrastination and of culpable lack of vision in not carrying out the mandates of the House of Delegates regarding our Public Relations program.

I accuse the Board of Trustees of bureaucratic highhandedness in not presenting to the House of Delegates the letter of April 8, 1947, and the supple-

mentary report of May 24, 1947, sent to it by the Rich Associates.

I accuse the Board of Trustees of unfairness in not requiring the Rich Associates to appear before the House of Delegates in their own defense.

I accuse the Editor of wasting space in the Journal. (Rocky Mountain Medical Journal, April, 1947.)

I accuse the Editor of the Journal of being the "spoiled child" of the AMA. I recommend that he be treated as spoiled children have been treated traditionally.

I accuse the National Physicians Committee of abrogating to itself, without justification, the right to speak for the AMA and of usurping the prerogatives of the recognized representatives of the AMA in Washington, D. C.

I accuse the National Physicians Committee of being dominated by individuals who exhibit more enthusiasm than judgment.

I accuse Dr. E. H. Cary of fathering the National Physicians Committee.

I accuse the California delegation of being the finest Delegation in the House.

I accuse the states composing the Rocky Mountain Medical Conference and their neighbors of overlooking an opportunity to meet and discuss our common problems and to act in concert in the House of Delegates.

I accuse all Executive Secretaries of being well-informed, discreet, loyal and indispensable.

I accuse the AMA of being an organization of men and women of the highest integrity.

The most offensive mass of protoplasm in the world is the human being who complains and criticizes but who offers no alternative course of procedure. Therefore, it is suggested:

1. That the Board of Trustees relinquish that "mother knows best" attitude.
2. That every Delegate be an interested Delegate for 365 days a year.
3. That every Delegate review the business transacted in the House of Delegates and write a letter of friendly comment and constructive criticism to the Editor of *his* State Journal or to any ethical medical publication.
4. That the recommendation of the Special Committee on the Rich Report in December, 1946: "In line with the new program in the process of accomplishment, this committee feels that the AMA should and must do its own public relations and legislative work." be activated with adequate personnel and sufficient funds, *now*.
5. That Dr. George H. Lull's "Secretary's Letter" contain a resume of current activities, policies and decisions of the Board of Trustees.
6. That we *really* make the American Medical Association "*our* association." It is, isn't it?

Fraternally,

William H. Halley, M.D.,
Delegate from Colorado

In Memoriam

Berkley, Hugh Kling. Died in Los Angeles, July 11, 1947, age 57, following a two-day illness. Graduate of the University of California Medical School, Berkeley-San Francisco, 1914. Licensed in California in 1914. Doctor Berkley was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

✣

Conlan, Francis Joseph S. Died in San Francisco, July 17, 1947, age 71, of a heart attack following a brief illness. Graduate of Rush Medical College, Illinois, 1899. Licensed in California in 1899. Doctor Conlan was a member of the San Francisco County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

✣

Ingram, Charles Henry. Died in Fresno, July 28, 1947, age 69, following a stroke. Graduate of the Cooper Medical College, San Francisco, 1903. Licensed in California in 1903. Doctor Ingram was a member of the Fresno County Medical Society, the California Medical Association, and the American Medical Association.

✣

Lindquist, Edward Nathaniel. Died in an aeroplane crash, July 5, 1947, age 43. Graduate of the College of Medical Evangelists, Loma Linda-Los Angeles, 1933. Licensed in California in 1933. Doctor Lindquist was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

✣

Martine, Angeline. Died in La Jolla, July 17, 1947, age 80. Graduate of the Woman's Medical College of Pennsylvania, Philadelphia, 1892. Licensed in California in 1925. Doctor Martine was a retired member of the San Diego County Medical Society, and the California Medical Association.

✣

Porter, Edwin Everett. Died in San Jose, August 26, 1947, age 71, after an illness of several weeks. Graduate of the College of Physicians and Surgeons of San Francisco, 1904. Licensed in California in 1906. Doctor Porter was a retired member of the Santa Clara County Medical Society, and the California Medical Association.

✣

True, Herbert Frederick. Died in Sacramento, August 1, 1947, age 67, of pulmonary edema, myocarditis, carcinoma of the prostate. Graduate of the University of Southern California School of Medicine, Los Angeles, 1903. Licensed in California in 1903. Doctor True was health officer for the City of Sacramento from 1930 until 1944. He was a member of the Sacramento Society for Medical Improvement, the California Medical Association, and the American Medical Association.

✣

Woods, Leonard. Died in Oakland, August 18, 1947, age 56, of a heart attack. Graduate of Stanford University School of Medicine, Stanford University-San Francisco, 1922. Licensed in California in 1922. Doctor Woods was a member of the Alameda County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

NEWS and NOTES

NATIONAL • STATE • COUNTY

BUTTE

Dr. Raymond Kilduff, Oroville, has been appointed Health Officer of Butte County.

HUMBOLDT

The City of Blue Lake, formerly served by Dr. George P. Purlenky as health officer, is now under the jurisdiction of the **County Health Department**.

LOS ANGELES

A discharged Naval officer, **Dr. Harold R. Hoover**, has announced the opening of offices in the Bank of America Building in Whittier.

Dr. George H. Kress, Editor Emeritus of CALIFORNIA MEDICINE and former C.M.A. Secretary, was guest of honor at the 91st annual convention of Sigma Alpha Epsilon, held at Mackinac Island, Mich., in August. Doctor Kress, who gave the major address at the convention banquet, was further honored by being elected to the post of Honorary Eminent Supreme Archon, succeeding General Carl Gray, Jr., in that office.

Dr. Charles S. Gallion, recently discharged from the U. S. Naval Medical Corps, has become associated with **Dr. J. W. Hankins** in Azusa.

MERCED

With the appointment of **Dr. John Philp** as full-time health officer, **Merced County** became the thirty-first county in California to have a full-time health department. Dr. Philp received his appointment following the completion of public health training at Harvard University School of Public Health.

RIVERSIDE

Unable to find a qualified physician to head the medical staff, Dr. B. Gene Morris has closed the 26-bed **Palo Verde Hospital** at Blythe, leaving 10,000 residents of the Palo Verde Valley without hospital service in an area of more than 100 miles.

SANTA BARBARA

Dr. Leland Lowland, recently discharged from the Army Medical Corps, has begun the practice of medicine in Solvang. He is associated with **Dr. Henry G. Hanze.**

SACRAMENTO

Dr. John T. Smiley has been appointed Chief of the **Bureau of Hospital Inspections** of the California Department of Public Health. Dr. Smiley served with the U. S. Army during the war as chief medical officer on the Ledo Road in Burma. More recently he has been assistant superintendent in charge of employees' health at Ancker Hospital, St. Paul, Minnesota.

SAN DIEGO

Dr. Lyell C. Kinney of San Diego, Chairman of the Cancer Commission of the California Medical Association, and Leonard V. Griffith, Executive Vice-President of the California Division of the American Cancer Society, recently accepted a $100,000 check for the Division from the **Damon Runyon Fund.** The check was presented by representatives of the film and radio industries to assist the Cancer Society's **program of research.**

Dr. Samuel N. Palevsky, who has been released from the army after five years' service in the Medical Corps, has opened an office at 8260 La Mesa Boulevard in San Diego.

SAN FRANCISCO

Units of the University of California and Stanford University have been awarded federal **grants for training mental health personnel** under the National Mental Health Act of 1946. The Langley Porter Clinic of the U. C. Medical Center in the field of psychiatry, the University of California at Berkeley and Stanford University in the field of clinical psychology, and the U. C. School of Social Welfare in psychiatric social work, all received awards. The institutions were chosen on recommendation of the National Mental Health Advisory Council, a body of experts in the mental health field.

Golden Gate Aerie No. 61 of the Fraternal Order of Eagles has opened a drive to have its members **contribute their blood** to the Irwin Memorial Blood Bank.

SAN JOAQUIN

Dr. Norman Freeman, Assistant Clinical Professor of Surgery, University of California, will discuss "Vascular Disease" before the **Stockton Postgraduate Study Club**, October 9 at 8 p.m., at the San Joaquin General Hospital.

The remainder of the **club's winter program**: October 16 at 8 p.m. in the auditorium of the Women's Building, Stockton State Hospital, Dr. James Hopper, Director of Laboratories, University of California Hospital, will discuss, "Water and Electrolyte Balance in Various Clinical States including Pre- and Post-Operative States."

October 23 at 8 p.m., at the same place, Dr. W. B. Neff, Associate Clinical Professor of Surgery and head of the department of Anesthesia, Stanford Medical School, will talk on "Anesthesia."

Dr. Charles E. McLennon, Professor of Obstetrics and Gynecology, Stanford, will discuss "Toxemias of Pregnancy" at the Women's Building auditorium, Stockton State Hospital, October 30 at 8 p.m.

November 13 at 8 p.m., Dr. Dwight L. Wilbur, Associate Clinical Professor of Medicine, Stanford

Medical School, will discuss "Medical Clinic on Gastro-Intestinal and Liver Diseases," at San Joaquin General Hospital.

"Uterine Bleeding with Special Reference to Malignancy," will be discussed by Dr. Ludwig Emge, Clinical Professor of Obstetrics and Gynecology, Stanford University, November 20 at 8 p.m., in the Women's Building, Stockton State Hospital.

A dinner meeting will be held at the Clark Hotel, December 11 at 6:30 p.m., with Dr. Louis Goodman, Professor of Pharmacology, University of Utah, as speaker. His subject, "Recent Advances in Therapeutics."

YUBA-SUTTER-COLUSA

Major Leon Swift, M.D., of the Marysville chapter of the Reserve Officers' Association of the United States was elected surgeon of the California department at the state convention of the association in August.

GENERAL

Applications for Part I of the examination of the **American Board of Orthopaedic Surgery** must be received by the Secretary, Dr. Francis M. McKeever, 1136 West 6th Street, Los Angeles 14, not later than January 15, 1948. Dates and places of examinations will be announced later.

Major General Raymond W. Bliss, Army Surgeon General, announced that all Army doctors and dentists will receive an **additional $100 per month** beginning with September. The Surgeon General declared that the War Department considered the raise "not as a pay increase but as an equalization measure designed to bring the incomes of medical and dental corps officers more nearly in line with those of civilian doctors and dentists."

The sixth annual meeting of the **American Academy of Dermatology and Syphilology** will be held in Chicago, December 6-11. Principal sessions will be held at the Palmer House, with special courses in histopathology and mycology scheduled for Saturday and Sunday, December 6 and 7, at the Medical Schools of the University of Illinois and Northwestern University. Teaching clinics will be held at the University of Illinois College of Medicine in Chicago on the afternoons of December 8, 9 and 10.

Deans of all medical schools have been advised that the National Advisory Cancer Council is prepared to receive applications for financial assistance in expanding their **cancer teaching programs** under an act of Congress permitting the national Cancer Institute to make grants-in-aid for this purpose. All grants by the Institute in the past have been for research work on cancer. Grants will range from $10,000 to $25,000 per year depending upon the activities to be undertaken.

Dr. Wingate M. Johnson, professor of clinical medicine at Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C., has been appointed a **member of the Board of Trustees** of the American Medical Association to fill a vacancy caused by the death of Dr. Charles W. Roberts last July. A graduate of Jefferson Medical College, 1908, he is a past president of the North Carolina State Medical Association as well as of the American Geriatrics Society, and is at present editor of the North Carolina State Medical Journal. Interested in the position of the general practitioner in the field of medicine, Dr. Johnson has served as chairman of the Section on General Practice of the American Medical Association.

The **American Allergy Fund** has announced the availability of **grants-in-aid** for research. Grants will be made to investigators in the biological sciences, both medical and non-medical, whose problems meet the requirements of the Scientific Advisory Council. Preference will be given problems with immediate relationship to allergy, although investigations in physiology, biochemistry, pharmacology, immunology, genetics and other basic sciences are solicited. **Applications** should contain the following information: Statement of specific research problems and an outline of the method or methods of procedure to be followed, description of research facilities in the institution where investigator will employ the grant, a tentative budget, statement of the applicant's research record, accompanied if possible, by publications or reprints. Grants will be made for one year in amounts not to exceed $3,500, and may be renewed from year to year if the progress report warrants continuation. Applications (seven copies) should be addressed to the American Allergy Fund, 525 Erie Building, Cleveland 15, Ohio, attention: Scientific Council.

The American Association for the Study of Goiter again offers the Van Meter **Prize Award** of three hundred dollars and two honorable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. The Award will be made at the annual meeting of the Association which will be held in Toronto, Canada, May 6, 1948, providing essays of sufficient merit are presented. Essays may cover either clinical or research investigations; should not exceed 3,000 words in length; must be presented in English; and a typewritten double spaced copy sent to the corresponding secretary, Dr. T. C. Davison, 207 Doctors Building, Atlanta 3, Georgia, not later than February 1, 1948.

Dr. Paul Dudley White of Boston and Dr. Tinsley R. Harrison of Dallas will be the guest speakers of the **California Heart Association** Postgraduate Symposia on Heart Disease. Dates of the meeting are: Los Angeles, October 23-24; San Francisco, October 29-November 1. The registration fee is $15 for either meeting. Further information may be had from Los Angeles Heart Association, 117 West Ninth Street, Los Angeles 15, or Heart Committee, San Francisco Tuberculosis Association, 604 Mission Street, San Francisco 5.

INFORMATION

Congressional Committee Charges Misuse of Government Funds by Agencies Plumping for Health Insurance

Charging that at least six Federal Government agencies are making unlawful use of government funds for propaganda activities supporting compulsory national health insurance, a congressional investigation committee has called for abatement action by the Department of Justice. The U. S. Public Health Service, The Children's Bureau, The Office of Education, The United States Employment Service, The Department of Agriculture and the Bureau of Research and Statistics, Social Security Board, are the six government agencies named in the first intermediate report of the subcommittee of the Committee on Expenditures in the executive departments authorized to investigate publicity and propaganda of federal officials in formation and operation of health workshops. The subcommittee report was adopted by the full committee under the chairmanship of Representative Forest A. Harness. (Republican, Indiana).

The conclusions were drawn from "careful evaluation of the testimony and documentary evidence presented by and relating to the federal agencies involved," the committee's report says.

Made a part of the report was "a chart prepared by the committee staff, showing the number of Federal agencies and the number of Federal pay-roll personnel participating in the so-called health workshops arranged throughout the country during the last two years, to mobilize pressure groups in behalf of a national program for what certain witnesses and authors of propaganda refer to as socialized medicine.

"The first meeting in furtherance of these health workshops," the report continues, "was held in Washington, D. C., on November 2, 1945. At that meeting only ten persons were present, all of them full-time employees of the Federal Government. George Perrott, of the United States Public Health Service, presided as chairman of the meeting. The Federal agencies represented in this meeting—and the representatives of these agencies were the only persons present—were United States Public Health Service, Department of Agriculture, and the Federal Security Agency.

"The latest figures available from the Budget Bureau show that for the fiscal year 1946 total expenditures in the executive branch for publicity and propaganda activities were $75,000,000. During that fiscal year 45,000 Federal employees were engaged, full or part time, in such activities. The most recent prior compilation by the Budget Bureau covering the fiscal year 1941 showed total publicity expenditures amounting to $27,770,000. An increase of approximately 300 per cent in Federal expenditures for publicity and propaganda in a period of five years is deemed by your committee to be a proper subject for inquiry by the Congress.

"It will be the purpose of your committee, in future interim reports, to examine this expenditure in detail by departments and agencies, with particular reference to illuminating those activities which are directed primarily to influencing the decisions of Congress on pending legislation.

"Our first report deals exclusively with activities calculated to build up an artificial, federally stimulated public demand upon Congress for enactment of legislation for compulsory health insurance referred to by witnesses and publications as the Wagner-Murray-Dingell bill.

"The extraordinary executive pressure exerted upon the staff of the United States Public Health Service to further the campaign for what certain witnesses and authors of propaganda refer to as socialized medicine is indicated by a letter sent under date of December 10, 1945, by Thomas Parran, Surgeon General of the United States Public Health Service, to all field men and staff operatives throughout the country. This letter referred to the message sent to Congress on November 19, 1945, by President Truman, urging enactment of a national health program. The Surgeon General's letter referred to the President's message as, a subject of the highest importance to every citizen. His letter continues:

> The appropriate executive agencies of the Government have been specifically instructed by the President to assist in carrying out this legislative program as presented to Congress on September 6, 1945.

"The Surgeon General then listed the several health bills pending before Congress, continuing:

> Every officer of the Public Health Service will wish to familiarize himself with the President's message and will be guided by its provisions when making any public statement likely to be interpreted as representing the official views of the Public Health Service.

"Pursuant to this policy, the Public Health Service launched its national program of health workshops.

"Following the Washington conference of November 2, 1945, a broader planning conference was arranged at the University of Chicago, November 26-27, 1945. At this meeting 20 persons were present, nine of whom were full-time employees of the Federal Government. The 11 non-Government persons in this meeting were representatives of the C.I.O., A. F. of L., and the Farmers' Union.

"Next the planning committee met in Washington, D. C., on December 10, 1945, to evaluate the Chicago meeting and plan for the health workshops. The first health workshop was held in St. Paul, Minn., February 6-10, 1946, with 80 persons participating, 15 of whom were Government employees, representing seven different agencies in the Federal establishment.

"The second health workshop was held in Jamestown, North Dakota, September 27-30, 1946, with 98 persons participating, 18 of whom were Federal employees, representing seven Federal agencies. The chairman of this meeting was Dr. Mayhew Derryberry, Ph. D., of the United States Public Health Service. Apart from Federal personnel, there were no doctors of medicine in attendance at this meeting as delegates. The testimony before your committee indicates that no registered doctor of medicine was invited to participate.

"All the evidence before your committee indicates that these health workshops were planned, conducted, and largely financed with Federal funds, by a key group on the Government pay roll, who used the workshop method of discussion subtly to generate public sentiment in behalf of what certain witnesses and authors of propaganda refer to as socialized medicine. It is evident from the record that most of the planning was done by the Federal officials in Washington prior to each workshop conference and that each meeting was devoted to their own purposes —that of organizing pressure groups to agitate for compulsory health insurance, as then pending in Congress.

"In preparation for the Jamestown Health Workshop, the Public Health Service distributed in advance to all invited delegates a packet of pamphlets published by the C.I.O., A. F. of L., the Physicians' Forum (a propaganda agency for the Wagner-Murray-Dingell bill), and the Government bureaus, in support of what certain witnesses and authors of propaganda refer to as socialized medicine. These packets were mailed to the delegates in advance of the conference, at Federal expense. They urged that letters be written to Senators and Representatives, advocating immediate action on the Wagner-Murray-Dingell bill.

"After the propaganda packets had been delivered, well in advance to the invited delegates, the Jamestown Health Workshop assembled on September 27.

"Your committee received a detailed account of this health workshop from Mr. E. F. Engebretson, executive secretary of the North Dakota State Medical Association, who attended as an uninvited observer. On June 18, 1947, Mr. Engebretson testified:

> The meeting began on Friday, September 27. Friday was spent in its entirety in a so-called training program. The sponsoring organizations had invited various Federal and State officials to attend the conference as so-called consultants. Twenty-one of these consultants were in attendance, of which 19 were Federal employees and two were employees of the State of North Dakota.
>
> The training session the first day was not open to the general membership of the Farmers Union or other groups sponsoring the program. Rather, a hand-picked group of leaders from the various local societies were brought in for the purpose of being trained in workshop procedure. This training program was handled entirely by the employees of the Federal Government. In charge of the program, in a general way, was Dr. Mayhew Derryberry, Chief of the Office of Health Education, United States Public Health Service. In charge of the training instructions was a Dr. Hubert Stanley Coffey, Chief of Training, Federal Security Agency. The hand-picked group from the local societies were designated as delegates, and in training them, they were seated around a conference table with the 21 consultants lined up behind them.

"After the training program, the indoctrinated delegates were given 30-minute tests to measure their leadership ability by setting forth the immediate health needs of North Dakota. At this point, Witness Engebretson testified:

> It was very interesting to note that when left to themselves the delegates seemed unable to think of any particular health problems in the State.

"Your committee then obtained from the Federal Security Agency a full copy of the instruction sheets used by the training officers at these health workshops. Among the topics listed are:

> Techniques for the organization of citizen groups.
> Formation of pressure groups.
> Methods of bringing about group action.

"Testimony demonstrating the efficacy of this indoctrination of delegates by the Federal officials was found in the formal summary of the Jamestown Workshop, as presented by the United States Public Health Service.

"One section of the 'action program,' approved by the conference, urged 'that congressional candidates and incumbents be polled by the committee, on their stand on the national health program, and that their opinions be sent to the State organizations for publication.'

PAMPHLETS PREPARED FOR C.I.O., A. F. OF L.

"In the opinion of your committee, this recital presents the complete picture of Government propaganda in action. The Federal employees arrange the meeting, invite the delegates, train the delegates, preside at the meetings, and then frame the formal summary of resolutions and actions.

"And all of this is paid for with public moneys never authorized or approved by Congress for these or any like purposes.

"Testimony before the committee indicates also that the staff and resources of the Bureau of Research Statistics in the Social Security Board were devoted freely, from time to time, to the preparation of pamphlets and propaganda literature for the C.I.O., the A. F. of L. and the Physicians' Forum. Much of this material prepared for the C.I.O. and other groups, by the Social Security Board at Government expense, supported what certain witnesses and authors of propaganda refer to as socialized medicine in every approach and dismissed contemptuously all arguments controverting the fixed position

of the Social Security Board (transcript of hearing, June 18, 1947, p. 170).

"Your committee concludes from the testimony that most, if not all, of this literature, as distributed by the C.I.O., the A. F. of L., the Farmers' Union and the Physicians' Forum originates in, and emanates from, the Bureau of Research and Statistics in the Social Security Board. Mr. Isadore Falk is Director of the Division of Research and Statistics in the Social Security Board. His principal assistant, Miss Margaret Klem, was a witness before your committee on June 18. Miss Klem was identified as Chief of the Medical Economics Section of Mr. Falk's Division. She was one of the group of Federal employees who charted, arranged, and conducted the Jamestown Health Workshop. The testimony discloses also that she helped draft the Wagner-Murray-Dingell bill.

"At a later date, your committee will submit a separate detailed report on the activities of the Social Security Board during the last 10 years in behalf of what certain witnesses and authors of propaganda refer to as socialized medicine.

"Other evidence before the committee reveals that the Bureau of Research Statistics of the Social Security Board also prepared pamphlets and propaganda material to be distributed under the imprint of the C.I.O. Similar pamphlets were prepared in the same office for distribution as Government literature through the Department of Agriculture's Interbureau Committee on Postwar Programs. All this material, as presented in our hearings, is similar in tone, content, and objective. It all originates in one spot, in the Social Security Board. It is all paid for, save the actual printing, by a process which your committee deems an improper use of Federal appropriations.

"Samples of all these pamphlets and propaganda leaflets are available in your committee's files for examination by the public. Photostatic copies of some of them have been transmitted to the Attorney General, with our request for action in defense of the American taxpayers, who are paying the bill.

"The spirit and purpose which dominates the officials of the United States Public Health Service in their campaign to high-pressure this legislation through Congress is reflected faithfully in the testimony of Dr. Herman Hilleboe, Assistant Surgeon General, who appeared before the committee on May 28, 1947. He was asked by our committee chairman if the literature prepared by the Federal agencies offered all sides of the discussion or was limited merely to supporting material to carry out the President's order. To this question, Dr. Hilleboe answered:

> We would naturally give emphasis to that, because that is why we are in government. Otherwise, we should get out of government.

"The same attitude of intolerance toward honest discussion or debate of the issue was indicated in the testimony of Mr. Harry J. Becker, health consultant in the United States Children's Bureau, Federal Security Agency.

"Questioned as to the number of speeches he had made throughout the country in advocacy of the subject, the witness recalled several such appearances. Committee counsel, Frank T. Bow, pressed the inquiry (transcript of hearing, June 18, 1947, p. 228):

> MR. BOW: Did you give both sides of the question of compulsory national health insurance when you gave your discussions?
>
> MR. BECKER: I don't know what you mean by "both sides."

"The Children's Bureau, Federal Security Agency, was represented in the health workshops movement by Mr. Harry J. Becker, a full-time employee of the Federal Security Agency, in the capacity of health consultant. Mr. Becker, while engaged in his Federal position, also was one of the principal organizers of the Group Health Association of Washington, D. C., of which he later became president. He is also vice-president of Cooperative Health Federation of America, which he helped organize in meetings at Two Harbors, Minn., and Columbus, Ohio, while on the full-time pay roll of the Children's Bureau.

ACTION AGAINST A.M.A. RECALLED

"In this connection, your committee recalls that it was the activities of the Group Health Association of Washington, D. C., which led to the filing, in 1937, of the antitrust proceeding against the Medical Society of the District of Columbia and the American Medical Association under the Sherman Antitrust Act.

"This legal action by the Department of Justice was carried to the Supreme Court of the United States on the basis of the original complaint and accusations of Group Health Association of Washington, D. C., serving effectively to intimidate and restrain the activities of the American Medical Association in resisting the Federal propaganda.

"Mr. Becker was a witness before your committee on June 18. His testimony delineates in some detail the historical development of the movement within the Federal Government to set up, at Federal expense, a nation-wide campaign in support of pending legislation. Your committee invites particular attention to the testimony and cross-examination of Mr. Becker, because we feel that the devices and arrangements of Federal employment in this instance provide a typical example of how funds appropriated by Congress for the legitimate expenses of Federal agencies are diverted within the bureaus to full-time propaganda for what certain witnesses and authors of propaganda refer to as socialized medicine.

"Not only are men and women paid substantial salaries in their Federal positions for their full-time activities in other fields, but in many instances traveling expenses and incidental costs of these pressure-group meetings are paid out of funds of the same Federal agencies.

"Your committee has, for example, a report from the General Accounting Office, showing that various Federal agencies paid out a total of $1,950 in traveling expenses of Federal employees to and from the

Jamestown Health Workshop. This conference took 13 Federal officials away from their desks for a total of 126 man-days.

"Another report from the General Accounting Office shows that the Federal Government paid almost $5,000 in traveling expenses of Federal employees for the series of five health workshop conferences and planning meetings held throughout the country before our investigation began.

"Certain documentary evidence also has come to the attention of your committee, that the Bureau of Research and Statistics in the Social Security Board also maintains close contact with movements for compulsory health insurance in other countries.

"Under date of May 14, 1947, Mr. Isadore Falk, Director of the Bureau of Research and Statistics, sent a memorandum to the Acting Commissioner for Social Security, urging that one Jacob Fisher, a member of Mr. Falk's staff, be sent to New Zealand at Government expense, to study compulsory health-insurance programs and activities in that nation.

"We find that this same Jacob Fisher has been documented by the House Committee on Un-American Activities for almost uninterrupted association, since 1939, with various Communist-front and fellow-traveler organizations in the United States. At various times, according to his record, Jacob Fisher has been identified with seven different groups or organizations avowedly sponsoring the Moscow party line in the United States. He has published at least one report on health insurance in New Zealand, in the Social Security Bulletin — a report which has been criticized by some reputable medical authorities as extremely biased.

"In a later interim report on the propaganda activities within the Social Security Board, we shall present to the Congress the detailed record of Jacob Fisher's activities, as certified to us by the Committee on Un-American Activities, together with additional material bearing upon organized Communist agitation for what certain witnesses and authors of propaganda refer to as socialized medicine, through such agencies as the Southern Conference for Human Welfare.

"Suffice it at this time for your committee to report its firm conclusion, on the basis of the evidence at hand, that American communism holds this program as a cardinal point in its objectives; and that, in some instances, known Communists and fellow-travelers within the Federal agencies are at work diligently with Federal funds in furtherance of the Moscow party line in this regard."

BOOK REVIEWS

RADIOLOGY (Section XIV of Excerpta Medica), a monthly abstracting service of world medical literature.

Volume I, No. 1 of this ambitious project states that the authors "shall prepare abstracts of *every* article on radiology appearing in the medical literature of the world." They cover 146 articles in the present issue. We suspect they would have to cover at least 500 per month to achieve world coverage. What a project. What a deluge.

They indicate that some articles dating back to 1940 will be abstracted, but that most will be from 1944 onward. An impressive board of editors, many of them internationally recognized radiologists, is listed on the front cover. However, most of the abstracts are actually by relatively minor lights in the radiological world.

The proofing, as well as the quality of some abstracts, should be improved. Examples: page 16, last line, "cause of the" should be "causative"; page 47, middle line, "post-operative" should be "preoperative."

Some of the abstracts are unreasonably short and some excessively long. (Examples: numbers 43 and 59). One deals with the surgical treatment of cancer of the larynx, a lonely surgeon amongst 146 radiologists; one might say, a lost surgeon.

The text is legible. The arrangement is neat. The project has some merit beyond all doubt.

* * *

GYNECOLOGY, with a section on Female Urology. By Lawrence R. Wharton, Ph.B., M.D., Assistant Professor of Gynecology, The Johns Hopkins Medical School; Assistant Attending Gynecologist, The Johns Hopkins Hospital; Consultant in Gynecology, The Union Memorial Hospital, Hospital for the Women of Maryland, Sinai Hospital and Church Home and Infirmary. Second Edition. 1,027 pages, with 479 illustrations. Philadelphia and London. W. B. Saunders Company, 1947. Price $10.00.

The second and enlarged edition of Wharton's *Gynecology* recently has come off the press and now is being offered to the profession by W. B. Saunders Company. The first edition was published in 1943 and deservedly took its place with other leading gynecologic texts. As an innovation among American texts of recent date it presented an attractive section on female urology which in most gynecologic texts is treated rather niggardly. Wharton's move to bring female urology into closer contact with gynecology is in the best of the "Hopkins" tradition. At "Hopkins" the two clinical entities are considered as inseparable as are male urology and the diseases of the male generative organs, and that is the way it should be taught, the opinion of urologists notwithstanding.

In this second edition, the author has given more detailed attention to the female urethra, which so often is treated badly or inadequately in general practice. Various matters of technical and pathologic importance have been revised and further illustrations have been added. Urologic therapy has been brought up to date, particularly as this pertains to chemotherapy. The principles of treatment are discussed comprehensively and the use of drugs and antibiotics, together with their toxic manifestations, are explained clearly. Wharton has summarized this on several tables which should prove very helpful where quick reference is wanted. The new chapter on water cystoscopy, written by Charles L. Prince of the Johns Hopkins faculty, presents the subject in a manner pleasingly concise and adequately informative as a technical guide. By introducing this chapter Wharton has broken with an old "Hopkins" tradition which has favored air- over water-cystoscopy in the treatment of women since the days of the great Howard Kelly. Also this is a move in the right direction since the mechanical treatment of urologic disease has changed considerably within the last decades.

The major section of Wharton's textbook is devoted to gynecology and was reviewed exhaustively at the time of its original appearance. The second edition has been enhanced by a complete revision of the chapters on embryology and congenital malformations. They are now definitely more informative and will please the medical student who forever is plagued by the maze of embryologic details he ordinarily has to penetrate in order to connect clinical developmental data. Wharton also has improved his chapters on endocrine dysfunctions and various uterine disturbances related to abnormal bleeding and dysmenorrhea by revising and adding to the subject matter. The reviewer believes, however, that in future editions the chapters dealing with functional bleeding can stand a closer correlation with the general subject of endocrine disturbances.

In the introduction to the second edition the author states that he has always tried to present both sides to controversial questions, and on the whole he has done so meticulously, as demonstrated by the addition of the chapter on water cystoscopy. However, he has fallen short in his intent when concerned with surgical methods. A perusal of surgical procedures described in the section on gynecology left the reviewer with the impression that certain surgical methods advocated received emphasis more on traditional grounds than on the basis of usage and merit. For instance, what is now called the Spalding-Richardson operation for the correction of prolapse of the uterus hardly deserves the emphasis it received. Spalding, after considerable experience with this operation, abandoned it in 1926 because he had come to the conclusion that the preservation of a cervical remnant for the purpose of providing an anchorage for the round ligaments was not nearly as important in the correction of pelvic herniation as the proper reduction of the hernial opening by an extensive repair of all the components of the pelvic fascia involved. Unfortunately, Spalding never published this and hence the operation as reintroduced by Richardson must await the test of time and usage in order to determine the real worth of the modified technique. The reviewer also noticed that the Ward technique of vaginal hysterectomy has been described as the method of choice to the exclusion of the simpler and more direct approach popularized by Heaney and others. He also noticed that prolapse of the vagina after hysterectomy is still being treated on the principle of the long abandoned and anatomically illogical ventrofixation of the uterus devised by the late Howard Kelly, although like enterocele vaginal prolapse is only a phase of a progressive pelvic hernia which can be cured in most instances by an anatomically correct repair of the fascial damage. These are personal opinions of the reviewer offered here solely in the hope that in a future edition the author may give consideration to a more generous discussion of certain surgical procedures open to controversy.

Thanks to the generosity of the publishers, Wharton's text is illustrated not only profusely but in the best tradition of the late Max Broedel, dean of American medical illustrators. Illustrations are not only pleasing to the eye and anatomically accurate, but dramatically graphic in their informative value. In perusing the many hundreds of illus-

trations the reviewer found only one instance of technical depiction which might be questioned and that is the Gilliam suspension operation where the illustrator has placed the anchorage of the round ligaments so high that it would result in an abnormally upward displacement of the uterus.

The bibliographic material of the second edition has been enhanced by the addition of recent publications. Many chapters have been revised and brought up to date. What was said of the first edition is even more true of the second and that is that the logical arrangement of the subject matter and the concise treatment of technical details makes for easy reading and quick reference. Once again, Wharton's *Gynecology* is recommended to the profession and the medical students as a gynecologic text and reference book of outstanding merit.

* * *

A TEXTBOOK OF MEDICINE. Seventh Edition. Illustrated. Edited by Russell L. Cecil, A.B., M.D., Sc.D., with assistance of Walsh McDermott, M.D., and Harold G. Wolff, M.D., Philadelphia and London. W. B. Saunders Company, 1947.

This outstanding textbook of medicine requires no introduction to the medical profession. Seven editions in 20 years reflects not only the continued demand for the book but the efforts of the editors to keep the contents up-to-date. It is not possible to review the 1730 pages, but it might be profitable to indicate wherein this edition differs from the sixth edition, published in 1943.

Most notable has been the change in editorship for the important section on Nervous Diseases. Dr. Harold G. Wolff of New York has taken the place of Dr. Foster Kennedy whose resignation follows 20 years of editorship. This section has been revised with new authors and new subjects included. Two of the articles of particular merit include that on "Headache" by Wolff and one in "Psychoneuroses" by Rennie.

Sixteen articles on subjects not previously covered include Blackwater fever, drug allergy, porphyria, hypervitaminosis, hemoglobinurias, psychosomatic medicine, diphtheritic polyneuritis, narcolepsy, etc.

Fifty-five articles by new contributors on subjects previously discussed include many outstanding sections. The new discussion on diabetes mellitus and hypoglycemia by Loeb is excellent. The new articles on the ductless glands include authoritative discussions on the adrenals by Thorn, on the thymus by Harvey and on the thyroid by Barr. The article on the meningococcus infections by Dingle should be mentioned, and two excellent colored photographs demonstrating the rash are included.

There has been considerable discussion as to the relative advantages of single versus multiple authorship in medical texts. For a broad general introduction to medicine, the one-author texts may be desirable, but if one desires a detailed discussion of the pathologic physiology or therapy of a subject, multiple authors with particular experience in their respective fields are preferable.

The use of multiple writers naturally results in a multiplicity of style and a variation of quality, but the reviewer has found that these disadvantages are outweighed by the specific information available for reference. The one criticism that may be offered is that there are too many authors in some sections so that cohesiveness is impaired. A greater attempt might be made to incorporate related topics, as has been done with the excellent sections on diseases of the stomach and intestines by Palmer, and the peripheral vascular diseases by Landis.

This text may be very highly recommended to medical students and practitioners for present-day opinion of American authors. It has no peer as a well-rounded textbook of medicine.

OCCUPATIONAL DISEASES OF THE SKIN. By Louis Schwartz, M.D., Medical Director, United States Public Health Service, Chief, Dermatoses Section; Associated Clinical Professor of Dermatology and Syphilology, New York University; Louis Tulipan, M.D., Clinical Professor of Dermatology and Syphilology, New York University, College of Medicine, New York City, etc., and Samuel Peck, B.S., M.D., Dermatologist, Mt. Sinai Hospital, New York City. Second edition, thoroughly revised, published 1947. Octavo, 964 pages, illustrated with 146 engravings and a colored plate. Cloth, Lea & Febiger. Price $12.50.

This book is an outstanding one for any physician's library and is a "must" for dermatologists, industrial physicians and students of industrial medicine. In your reviewer's opinion it is by far the best work on the subject in the English language and, probably, the best available in any language.

Industrial dermatoses constitute about 65 per cent of all occupational diseases. To understand them a physician must know something about the manufacturing processes and intricate chemistry involved in all of the old and newer fabrications. Obviously, it is impossible for him to obtain this knowledge first hand. The authors of this text have gone out into the plants and have compiled this information for him.

The text takes up, chapter by chapter, almost every conceivable manufacturing process, discusses all of the steps involved, all of the various chemicals and irritants encountered and tells of their effects upon the skin. For example, the manufacture of dyes, resins, lacquers, oils, leathers and cosmetics is carefully described. There are many tables of valuable information. For example, one table alone includes about 1,000 possible industrial irritants and gives the correct strength and vehicle used for patch testing.

There are excellent chapters on the medicolegal aspects of industrial dermatology, on the compensation laws of various states, on prophylaxis and plant sanitation, on patch testing, on the war gases.

The senior author, as Chief of the Section on Dermatoses Investigation of the United States Public Health Service, was particularly active during the war studying the origin of dermatoses among the armed forces and in the war industries and in devising methods of preventing them.

The book is exhaustively indexed, has valuable bibliography and is well illustrated. Some of the photographs, probably taken under field conditions, could be improved.

* * *

SYNOPSIS OF OPERATIVE SURGERY. By H. E. Mobley, M.D., F.A.C.S., Chief of Surgery at St. Anthony's Hospital, Morrilton, Arkansas. With 383 Text Illustrations, including 37 in color. Second Edition. 1947. The C. V. Mosby Company, Publishers, St. Louis.

According to the author, the book "is intended for those serious-minded students who desire to secure a clear and concise picture of each step in any important operation." It is a compendium of operative procedures and makes an effort to cover the entire field of surgery including ophthalmology, otolaryngology and neuro-surgery. Most common operative procedures are described and illustrated. There is substantially no discussion of diagnosis, indications for or hazards and complications of operation. Pathological, bacteriological, physiological and chemical considerations are omitted. Such discredited and disearded operations as drainage of the abdomen for generalized peritonitis, gastropexy, splenopexy and splenotomy are included. The only description of Caesarean section is that of the old, classieal operation. Operative procedures are better described and illustrated in a number of standard works. The book fills no need and occupies an unimportant place in the surgieal literature.

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What's New in Gastro-Enterology*

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IT is difficult to appreciate the rapidity with which new facts in the field of gastro-intestinal disease have been accumulated until one attempts to review the subject in preparation for a presentation such as this. The two most widely discussed subjects, the world-wide epidemic of viral hepatitis and its late consequences,[18] and the effects of section of the vagus nerves on the course of peptic ulcer[16] have been discussed elsewhere during this meeting and will not be considered in this presentation.

STOMACH

A group for the study of methods leading to the earlier diagnosis of carcinoma of the stomach has been formed recently under the direction of the National Institute of Health. Two important contributions already discussed by this group have to do with the high incidence of carcinoma in stomachs showing achlorhydria. The incidence of gastric carcinoma in patients with pernicious anemia, who invariably show an absence of free hydrochloric acid, is, for instance, many times more than the average for persons in the same age groups. Furthermore it has been shown that in all cases of carcinoma studied at one clinic where test meals had been done years earlier on the same patients, achylia had been found on the original test meal in every case. Since atrophic and polypoid gastritis are often associated with achylia, these observations tend to support earlier observations on the relation of such types of gastritis to the later development of gastric carcinoma and to emphasize the importance of continued roentgenologic and gastroscopic observation of such disorders.

There is an increasing disinclination on the part of gastro-enterologists to treat gastric ulcer by medical means because the margin of error in diagnosis is altogether too great for safety. The obvious inference is that patients who are proved to have achylia or any other supposedly benign intrinsic gastric disorder should undergo periodic roentgenologic study and close observation.

SMALL AND LARGE INTESTINES

Duodenal ulcer.—The increase in the number of cases of duodenal ulcer requiring treatment during the war years has been striking, as has been the frequency of reactivation of latent or inactive ulcers among persons subjected to the strains of war. With the realization of the great frequency of peptic ulcer in adults, interest in new methods of treatment has developed. Among these may be mentioned the use of various detergents, saponins, amino-acid mixtures and certain synthetic resins used as exchange adsorbents for hydrochloric acid.[8] The first two seem marked for the limbo of such long-forgotten therapeutic agents as gastric mucin and histidine. Enterogastrone is undergoing an extensive clinical trial. This material, which is isolated from the jejunal mucosa of animals, inhibits gastric secretion in both the intact and the vagotomized stomach and prevents the formation of Mann-Williamson ulcer in dogs under experimental conditions which usually induce an ulcer. Some reported clinical experiences with enterogastrone have been encouraging[6] but the results of the control studies now under way will probably be required before its exact field of usefulness can be established.

So far as vagotomy is concerned, it seems firmly established in two fields; namely, in the treatment of the anastomotic ulcer after a previous resection of the stomach, and as an adjuvant measure to either

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gastro-enterostomy or gastric resection. It undoubtedly has other fields of great therapeutic value but undesirable sequelae (gastric retention, diarrhea and cardiospasm) are rather frequent. Certainly its routine use can hardly be recommended for all types of peptic ulcer at the moment until the permanence of the resulting decrease in acidity is determined. Vagotomy possesses one great advantage; it does not mutilate or destroy the continuity of the upper part of the digestive tract; it burns no bridges and does not seriously hinder later attempts at radical surgical cure of ulcer. If the operation achieves, as some now think it may, a permanent corticogastric dissociation,[15] it seems assured of a permanent place in the surgical armamentarium.

Another advance in the field, somewhat indirectly concerned with ulcer therapy, has to do with the management of gastrojejunocolic fistula. These lesions usually follow perforation of anastomotic ulcers. The long-continued presence of such a fistula is usually productive of an extreme degree of nutritional disturbance and as a result its surgical repair is at best a difficult and hazardous procedure. Recent studies by Renshaw and his associates[17] on animals with experimentally produced fistulas have shown the incorrectness of the old idea that gastric contents by-passed the small bowel and entered directly into the colon. Actually colonic contents appear to flow back into the small intestine and stomach. This reflex reduces efficiency of the small intestine as an absorptive surface by producing subacute and chronic inflammatory changes in the mucosa. These observations serve to explain some of the good results obtained years ago when colostomies, which decompressed the colon, were performed as the first stage of repair of such a fistula.

Marshall[13] of the Lahey Clinic had anticipated Renshaw's experimental results. In cases of gastrojejunocolic fistula he divided the terminal part of the ileum and made a side-to-side anastomosis between the proximal part and the descending colon. By this means, contents of the right part of the colon were deflected from the stomach and jejunum, and the absorptive functions of the small intestine were restored. After this procedure the nutritional defect may be corrected speedily and resection of the fistula, therefore, may be done with greatly reduced risk. In some cases the ileosigmoidostomy alone has produced satisfactory relief of symptoms and possibly a closure of the fistula.

Other conditions of the small intestine.—In general the small intestine has been virtually *terra incognita* so far as accurate clinical diagnosis is concerned. Each successive year brings an increasing group of diagnostic advances in disease of this part of the body. These come chiefly from roentgenologic sources. Recently data[11] on a group of 49 neoplasms of the duodenum which were diagnosed roentgenologically have been reported. It is of some interest to note that the symptoms were chiefly those of mechanical obstruction and bleeding and that diagnosis depended on careful roentgenoscopic study of the second and third portions of the duodenum, where about 70 per cent of these lesions (carcinomas, leiomyosarcomas) are located.

Sprue.—Some notable advances have been reported in the treatment of sprue with folic acid.[12] The cases so far reported have largely been studied in tropical hospitals and clinics, and uniformly good results apparently have been attained. The diarrhea ceases, the nutritional status of the patient improves and the familiar macrocytic anemia disappears. An attempt to use folic acid therapy in temperate climates for patients presenting the sprue syndrome has not fared so well.[21] A careful study of a group of patients who had sprue, made under constant dietary and environmental conditions in a metabolic unit, has failed to disclose any significant alterations in loss of fat and nitrogen while various doses of folic acid were being administered. Neither the anemia nor the other associated nutritional defects decreased. These rather sharp differences in therapeutic response suggest that the tropical and nontropical types of the disease may have different etiologic origins. This concept furnishes a new starting point for the study of this puzzling disorder.

Chronic ulcerative colitis.—Little that is new can be reported on the subject of chronic ulcerative colitis. A long and detailed study of sulfonamide and other antibiotic therapy of the intractable disease has failed to yield anything new. Although the sulfonamides of low toxicity, such as sulfathalidine, possess some therapeutic advantages, they add little that is encouraging to the earlier partial successes with neoprontosil. Other antibiotics generally have had a limited effect on the acute case during relapse, although a few mildly optimistic reports[9] on the effectiveness of streptomycin in fulminant cases have appeared. British workers[14] have used thiouracil in a few cases and have made a report sufficiently encouraging to warrant further study.

The old controversy over the etiology of ulcerative colitis may well be renewed by a recent report of Felsen and Wolarsky[5] who have long held that this disease, as well as regional ileitis, represents the residual chronic lesions produced by previous infections with organisms of the dysentery group. They cite the fact that 10 per cent of individuals who contracted bacillary dysentery in the Jersey City epidemic of 1934 now have ulcerative colitis. They also have studied 60 cases of ulcerative colitis in veterans, in 33 of whom the initial symptoms could be traced to previous acute bacillary dysentery. In about 10 per cent of this group they recovered Shigella dysenteriae (Bacillus dysenteriae) from the bowel by aspiration of mucosal crypts. In the control group less than one-tenth of 1 per cent revealed positive cultures.

Some unpublished data[7] on the treatment of diffuse ulcerative tuberculous enterocolitis with streptomycin permit me to conclude the report on intestinal disease with an encouraging note. This disease usually associated with extensive open pulmonary tuberculosis, has shown a gratifying response to

streptomycin therapy. I am not aware of any data on the effectiveness of such therapy in the hyperplastic form of ileocecal tuberculosis, but peritonitis due to tuberculosis seems to be most favorably affected by this antibiotic agent. With the formidable list of such substances now undergoing clinical trial, it is not too much to expect that the chronic inflammatory intestinal diseases (ileocolitis and ulcerative colitis) may soon be found to be amenable to therapy of this type.

THE PANCREAS

The major event of the war years in the field of pancreatic surgery was the development of the Whipple operation for radical removal of pancreatic neoplasms. Performed as either a one-stage or a two-stage procedure, it involves the removal of considerable portions of the stomach and duodenum along with the pancreas, the performance of choledochojejunostomy and, when the tail of the pancreas is not excised, the approximation of a loop of jejunum to the severed portion of the pancreas. Curiously enough, the risk of the operation in good hands has not been excessively high. The one-stage operation in early cases carries a risk of about 10 per cent. Since the condition is detected only at a late stage in many cases, the end results to date have not been particularly encouraging. Some long periods of survival after operation are on record, however, and with further improvements in diagnosis and surgical technique, better results are not out of the question.

Of great interest are the nutritional consequences of this extensive procedure. As a rule, considerable steatorrhea and creatorrhea are noted, but they may be partially corrected by the use of pancreatic extract. Diabetes, an associated disease in some cases, has not been made much worse by the operation, and the requirements for insulin are only moderately increased. A comparison of the loss of fat with that seen after gastric resection suggests that the loss of the duodenum as an absorptive surface is probably almost as important as the loss of the external secretions of the pancreas.

Internists generally are grateful for any reports which clarify the history of benign inflammatory pancreatic disease. Such a report was forthcoming during 1946. The authors (Comfort and associates [4]) defined the clinical syndrome of chronic relapsing pancreatitis and have shown its relation to pancreatic calcinosis and lithiasis. They have shown that the disease is characterized by recurring acute exacerbations which at first are manifested only by painful episodes, temporary glycosuria and transient increases in the concentrations of amylase and lipase in the serum. As each successive attack destroys more pancreatic acinar tissue, the changes in the serum enzymes become less striking and the picture of deficiency of the external pancreatic secretions makes its appearance. This may or may not be associated with diabetes. Still later, calcification of the pancreas and complete loss of its external and internal secretions ensue. The authors emphasize that chronic pancreatitis of this type is not a rare disease, that the character, distribution and location of pain should lead to early recognition if the condition is borne in mind, and, finally, that whether the underlying pathologic processes be those of edema, hemorrhage, fibrosis, calcinosis or cysts, the nature of the clinical syndrome is essentially unchanged.

Since the primary disease is often associated with disorders of the biliary tract, the best available means of treatment is surgical and consists of prolonged external or permanent internal biliary drainage (choledochoduodenostomy). Even after this is accomplished, the painful seizures and progressive destruction of the pancreas may continue. In such cases total pancreatectomy may be considered as a last resort.

HEPATIC DISEASE

One of the most important fields of investigation of hepatic disease at present is that concerned with the possible residues of epidemic hepatitis, a disease which has involved uncounted numbers of service personnel and civilians in the past five years. It is now believed that a fairly large number of these persons continue to have symptoms, of which the most constant are lassitude, pain in the right upper quadrant of the abdomen and relative intolerance to fatty foods. Hepatomegaly or splenomegaly or both, plus alterations of varying degree in the results of studies of hepatic function, often are present. The probable outcome of chronic hepatitis of this type remains uncertain.

Among the other possible consequences of epidemic hepatitis, as yet traced to it chiefly by circumstantial evidence, are two distinct types of progressive degenerative diseases of the liver. The first is the type sometimes described as toxic cirrhosis or atrophy; the second is a more chronic variety with many of the features of hypertrophic biliary cirrhosis. Both varieties tend to progress (the first rapidly, the second slowly) and eventually present a terminal clinical picture comparable to that seen in Laënnec's cirrhosis. Continued study and observation of patients who have had infectious hepatitis and whose health has not been regained doubtless will reveal other residues of this disease. Likewise, a review of groups of patients who have chronic hepatic disease of obscure origin may indicate that infectious hepatitis may have been of etiologic importance. Watson [20] has offered a suggestion as to a means by which such cases of liver injury may be distinguished from those secondary to cirrhosis or dietary deficiency or both. In the postinfectious group there is increased excretion of the type I isomer of coproporphyrin, while in the alcoholic variety of cirrhosis, the type III isomer is found.

The study of hepatic and portal venous flow in normal persons and in patients who have liver disease has languished for some years because of lack of suitable methods for its determination. Recently Bradley and his associates [3] have attacked the problem by introducing a catheter into the hepatic veins by way of the right side of the heart. The rate of blood flow through the liver may be calculated by

determining the clearance rate and concentration of continuously administered bromsulfalein in the hepatic veins and in the peripheral blood. In cirrhosis, the hepatic blood flow is significantly decreased, a fact which might have been predicted from the pathologic changes observed in cirrhosis. It also leads the investigator to the tentative conclusion that a great part of the blood passing through the liver in cirrhosis is that which reaches it via the hepatic artery. These observations may be of clinical importance when portacaval anastomosis, a surgical procedure developed recently at Whipple's clinic for treatment of portal hypertension, is considered. They give assurance that a considerable degree of short-circuiting of the portal blood may have preceded the operation contemplated by the surgeon.

As is generally known, portal hypertension usually results from the constriction of the portal venous bed by scar tissue subsequent to chronic disease of the liver and is the pathologic factor responsible for the development of collateral venous circulation and the formation of esophageal varices. Until recent times, no entirely satisfactory method for the control of bleeding from the esophageal vessels has been available. Splenectomy, omentopexy, ligation of the coronary veins of the stomach and direct injection of the esophageal vessels have all failed to produce entirely satisfactory results. Blakemore and Lord[1] have anastomosed the hypertensive portal or splenic vein with the caval vessels by two methods: (1) joining the splenic and left renal veins after simultaneously removing the spleen and left kidney, and (2) forming an Eck fistula by implanting the severed distal portion of the portal vein into the vena cava. The latter operation is said to be somewhat less difficult and may be the procedure of choice. Both will considerably reduce portal hypertension, as their originators have shown by direct manometric measurement.

In a small series of cases described by these investigators, cessation of bleeding, diminution of ascites and even improvement of hepatic function have occurred. In spite of the fact that these operations require special knowledge of vascular surgery and a high degree of surgical judgment and skill, they probably will be utilized more extensively in the future. Their importance may be appreciated when it is considered that hemorrhage from ruptured esophageal varices is directly or indirectly responsible for the death of perhaps 15 per cent of patients with cirrhosis.

Medical treatment of hepatic disease continues to concern itself with the less spectacular but equally important business of maintaining the nutritional status of the patient, with particular reference to protein and vitamin metabolism. Since the results of treatment of cirrhosis by primarily dietetic means were first reported, numerous additional studies on the subject have appeared fully confirming the original observations. Various accessory therapeutic agents have been employed recently, notably choline and methionine, each of which has a specific effect on certain types of nutritional hepatic injury in animals. Evidence indicates that each may have a place in clinical medicine, but for the present their effectiveness in hepatic disease has not been verified by adequate control studies. Choline seems to be of definite value in the treatment of large and presumably fatty livers of alcoholics. Methionine on the other hand has contributed little or nothing to the treatment of epidemic hepatitis.

Two newly introduced therapeutic agents in hepatic disease rest on firm physiologic ground. The first is a preparation of liver extract designed for intravenous administration in dosage in excess of that employed in the treatment of primary anemia. This material has been the subject of a recent report from the Rockefeller Institute.[10] Patients receiving the material over considerable periods have shown an increase in appetite, in the intake of food and in serum albumin, improvement in results of liver functional tests and disappearance of ascites. More important, a survival rate of 77 per cent in a two-year period was reported.

The use of serum albumin of the concentrated salt-poor type prepared according to the methods developed in Cohn's laboratory also has been the subject of recent reports. Its use in cirrhosis with ascites and decreased level of serum albumin has been attended by retention of a large part of the injected albumin, an increase in the albumin content of the serum, diuresis and reduction in ascites.[2] The high cost and scarcity of the material largely preclude its general use, but it may eventually be employed in the treatment of cirrhotic patients who cannot be induced to increase their intake of food and who cannot be maintained in nitrogen equilibrium by ordinary means.[19] Since individuals with hepatic disease appear to stand or fall on their ability to retain nitrogen and manufacture protein, the use of albumin probably will be extended to cover further deficiencies in this field of therapy.

DISCUSSION AND QUESTIONS AND ANSWERS

DR. SNELL: I have been asked whether there is any method of treating plasma which will permit its use without danger of transmitting serum hepatitis. No satisfactory method is known at present. It has been thought that irradiation with ultraviolet light may inactivate the virus, but I understand that some recent studies have cast doubt on the value of this procedure.

Next question: "Does this necessarily mean that all the Red Cross plasma must be discarded?"

Probably not, since recent studies indicate that it may be possible to inactivate the virus by heating it under certain conditions and then concentrating the plasma to form salt-poor concentrated serum albumin. This preparation, of course, is fully as effective in shock and in the treatment of burns as is plasma and has the advantage of higher osmotic pressure and smaller bulk.

Next question: I have been asked in regard to the dose of enterogastrone.

Since there is no way of standardizing the material, exact dosage is not known, and it has been given chiefly by a process of trial and error. Intramuscular use of enterogastrone has been largely abandoned because of irritation. Oral

preparations are still in the experimental stage. It is possible that within the next few months there may be some idea as to the dosage of the preparation.

The next question is as to the dose of pancreatin.

About 5 grams of pancreatin a day is required to control steatorrhea of pancreatic origin. Smaller doses are of little value.

Next question: "What is the present status of vagotomy for the treatment of peptic ulcer?"

This question has been considered fully in another portion of this program and will not be discussed in detail here. The operation has one feature which must be borne in mind. Having performed it, the surgeon has not burned his bridges or mutilated the digestive tract. He leaves the field free for further procedures at a later date. This is of some importance when one considers the youth of many patients with ulcer.

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What's New in Peripheral Vascular Disease*

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THE field of vascular surgery has expanded so rapidly during the past several years that selection is necessary in reviewing the recent advances. The intention here is to present only a brief summary of the outstanding contributions.

DRUGS ACTING ON THE SYMPATHETIC NERVOUS SYSTEM

Great interest has been shown in the sympatholytic drugs, those which inhibit vasoconstriction. Although the pharmacology of quaternary ammonium compounds has been known since the researches of Burn and Dale [6] in 1914, clinical application has been greatly stimulated by the publications of Moe and other investigators from the University of Michigan School of Medicine.[3,10] They have shown that tetraethylammonium chloride blocks the transmission of autonomic impulses across ganglia producing a paralysis of both sympathetic and parasympathetic activities. This drug can be safely given by intravenous injection in man in doses up to 5 cc. of a 10 per cent solution. It has proved especially useful in the diagnosis of peripheral vascular disease. Since vasoconstriction is abolished, if there is little or no organic occlusion the skin temperature of the digits rapidly rises to a high level. In this respect, its effect is comparable to that obtained by sympathetic block, local nerve block or the vasodilatation test. We have observed that occasionally, especially in patients with marked vasoconstriction, the skin temperature fails to rise to the level subsequently produced by other methods. The relief of pain due to causalgia and reflex dystrophy is frequently impressive. The blood pressure may fall to low levels, especially in patients with high blood pressure. Postural hypotension is generally observed so that patients must be kept lying down for an hour or more after administration of the drug. Adrenalin is a specific antidote for the circulatory depression. There are various side effects, such as failure of accommodation, dryness of the mouth, arrest of peristalsis and bladder atony which preclude prolonged use.

Dibenamine, another adrenergic blocking agent, has been studied by Nickerson and Goodman.[11] This drug has been used in a wide variety of clinical conditions. Chemically it is closely related to the nitrogen mustards and may have a toxic action on the bone marrow.

Benzylimidazoline (Priscol) is similar in its pharmacological properties to these other two drugs, but according to Yonkman,[7] is cholinergic as well as sympatholytic. Its action is sustained considerably longer than that of tetraethylammonium chloride. Few studies have been reported outside of Europe. All of these drugs must still be looked upon as in the experimental stage but the interest shown in their development is highly significant. Hyperactivity of the sympathetic nervous system with its attendant vasoconstriction may interfere with adequate blood supply to the tissues. It can be predicted with some assurance that chemical control of vasomotor disturbances may ultimately be attainable.

TREATMENT OF PERIPHERAL ARTERIAL DISEASE

Treatment of obliterative vascular disease by vasodilatation has long held attraction. Two additions have been made within the past year to the therapeutic armamentarium. Katz[9] has reported the use of intravenous ether, euphemistically termed diethyl oxide, in the treatment of impending ischemic gangrene. More recently Wirtschafter and Widmann[12] have described the benefits, even in the presence of advanced gangrene, of the intramuscular administration of 5 cc. of 4% histidine monohydrochloride together with the subcutaneous injection of 100 mgm. of sodium ascorbate. Too short a time has elapsed since the introduction of these methods of treatment to permit a critical appraisal of their merits. The use of vasodilators which act on blood vessels throughout the body in the treatment of arterial obliteration limited to a specific segment of the vascular tree must be looked upon with caution. General vasodilatation, unless accompanied by a considerable increase in cardiac output, may so lower the blood pressure as actually to decrease the blood flow to the affected tissues since the normal blood vessels may dilate more than those which are partially occluded. Again, it is probable that lack of blood supply itself is a vasodilating stimulus as powerful as it is physiologically possible to obtain. The beneficial results ascribed to these forms of treatment may be due to some mechanism other than vasodilatation in the ischemic area.

THROMBOEMBOLIC DISEASE

Thrombophlebitis and pulmonary embolism have received increasing attention as methods of control and prevention have become available. Although there is still a controversy between those who favor vein ligation and those who advocate the use of the anticoagulants, it is becoming increasingly clear that both methods have value. That form of treatment should be selected which is best suited to the individual case. The chief objections to the use of heparin have been the problem of controlling the coagulation time and the technical difficulty of intravenous administration. Bauer[2] has shown that the incidence of thromboembolism can be dramatically lowered by giving heparin by vein 3 or 4 times each day, even though it is recognized that the clotting time is not uniformly prolonged by this method. The technical difficulties of repeated venipuncture may be overcome by the use of a needle fitted with a rubber

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membrane as suggested by Jorpes.[8] The needle is left in the vein and repeated injections of heparin are made through the rubber diaphragm.

Dicumarol is inexpensive and can be given by mouth. Its use must be carefully controlled by repeated determinations of the prothrombin level in the blood. Encouraging results from the prophylactic use of small doses of dicumarol, 200 mgm. on the 2nd or 3rd day after operation, have been reported by Allen.[1]

SURGERY OF BLOOD VESSELS

Surgery of the major blood vessels has progressed steadily in the direction of conservation and restoration of function. Anastomosis of a large branch of the aorta to one of the pulmonary arteries to increase the blood flow through the lungs, so brilliantly conceived and executed by Blalock,[5] is being more widely used. Coarctation of the aorta is being successfully treated by resection of the narrowed isthmus with end-to-end suture of the divided aorta. The portal vein or one of its major tributaries has been anastomosed to the inferior vena cava or renal vein to overcome portal hypertension with its attendant hemorrhages from esophageal varices. Encouraging results in the treatment of aneurysms of major systemic arteries by use of a vein-inlay graft have recently been reported by Blakemore.[4] Repair of the artery in the presence of an arterio-venous fistula by suture of the defect in the arterial wall has led to complete restoration of function in 75 per cent of the patients in whom this operation was attempted. All of these developments have been directed toward improving the circulation and restoring function.

SYMPATHECTOMY

Sympathectomy is being more widely used as the indications for release of vasomotor tone are clarified. In the treatment of hypertension, even in those cases in which the blood pressure continues at a high level, improvement in the retinal vessels and cardiac function indicates that the progress of the disease has probably been slowed down or checked. In the treatment of obliterative arterial disease not so much reliance is now placed on diagnostic tests as formerly. Even though there is but little rise in skin temperature from temporary suppression of vascular tone as by nerve block, the results of sympathectomy have been surprisingly good. Of great significance as indications for sympathectomy are signs of increased sympathetic activity such as increased sweating and cyanosis. Certain contra-indications to the use of this operation have recently been emphasized. In the presence of severe arterial obliteration with tissue atrophy and rapid blanching of the extremity on elevation, sympathectomy, by opening up all the vessels in the extremity, may precipitate gangrene through diversion of blood from the most distal tissues. Where there is some capacity for the formation of new blood vessels, sympathectomy may be of increasing help through assisting in the development of the collateral circulation.

QUESTIONS AND ANSWERS

Dr. Freeman: First question: "Is there any known liver damage from tetraethylammonium chloride?"

None so far reported.

Next question: "What about tetrathione in peripheral vascular diseases?"

Improvement in the utilization of oxygen and an increased oxygen saturation has been reported in patients with Buerger's Disease after the administration of tetrathione. I personally have had no experience with its use.

Next question: "A man with blood pressure of 130 over 80 is having difficulty when walking and must stop and rest a while before continuing. X-rays show nothing."

In the first place I should like to know the patient's age. I should also know whether or not there are any other vessels involved. Only by careful diagnosis of the arterial disorder can we determine what form of treatment is indicated. Occasionally biopsy of a thrombosed artery or arteriography after the injection of Thorotrast is helpful in differentiating arteriosclerosis from Buerger's Disease.

Next question: "Discuss the oscillating bed."

The oscillating bed is of great help at times with patients who have severe arterial obliterative disease, especially if they have continuous rest pain at night. We have previously demonstrated a small but definite increase in blood flow with the oscillating bed. This form of treatment has a great advantage in that it works automatically 24 hours a day and that there are practically no contraindications to its use. It can be used with benefit even in the presence of infection.

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What's New in Tropical Medicine*

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THE term "Tropical Medicine" was many years ago found by its practitioners to be a misnomer. Long search, however, failed to find a better one. Accepting it, then, for its brevity, its emphasis on a major feature, its history and its connotations, tropical medicine means the practice of medicine in warm climates. A warm environment aids the growth of vectors of tropical diseases and of such pathogens as viruses, fungi, bacteria, human protozoa and other parasites, and, very importantly, may alter the quantity and quality of human nutritional agents including caloric values, vitamins, minerals, biologic protein values and their sources. Pathogenic organisms usually occur in luxuriant, perverted or exotic forms in warm climates. As a result tropical medicine differs in emphasis, material and method from the medicine of temperate and cold climates. Human geography, with the geographic influences of climate on man and his artifacts, completes the picture.

In the United States, it is known that many tropical diseases are already present, either endemic (like murine typhus, hookworm disease, trichinosis, amebiasis and malaria), or repeatedly introduced (like dengue). Some, formerly considered rarities of importation, are found more prevalent with better diagnostic methods (as histoplasmosis). Others are minor actualities and enormous potentialities, such as onchocerciasis, leishmaniasis, pinta, yaws, louse typhus, schistosomiasis, American trypanosomiasis and numerous helminths.

Since about 1939, new points of view and research interests in the specialty of tropical medicine, and new factual data in the study and control of specific diseases have appeared or have attained recognition. During this period, these new fields of interest have burgeoned and their importance has been accentuated by increased commercial relations and travel between the United States and more tropical lands, as well as by military necessities. The same applies in a degree to relations between the warmer and the cooler parts of the United States. The emergence of both these conditions found the United States inadequately provided with institutions and men trained in tropical medicine. The advances, foreseen by the few and hitherto ignored by the many, have been unusual.

NEW TRENDS IN TROPICAL MEDICINE IN PAST EIGHT YEARS

War, and the needs of travel and commerce have brought a sharper realization that the world areas of hot wet, and hot dry climates must be studied as a whole for the first time with reference to land utilization and the food supply of the human race.

The teaching of tropical medicine in medical schools has received intensive consideration. Necessary and valuable advances were made in provision of material and trained instructors in practically all medical schools. With the let-up in military requirements, it remains to be seen if the medical schools will provide in the future to a sufficient extent for the practical needs of their students, for the certain needs of the military, of commerce, of travelers and missionaries, and for the requirements of wide fields of preventive medicine. Tropical diseases for the United States are today a sufficient threat to justify medical school instruction in recognition and control. This instruction should be "adequate and required."[1]

The national and world need for research and graduate teaching in tropical medicine have received splendid recognition in the establishment of the Liberian Institute of the American Foundation for Tropical Medicine, Inc. This Institute, in the words of Doctor T. T. Mackie, its president, "represents a partnership between the government of the Republic of Liberia, American business and American science." It will afford a well-equipped field station for intensive study of medical and economic problems of hot climates. Of the new things in tropical medicine, the establishment of the Liberian Institute is one of the most significant.

NEW FACTUAL DATA

New factual data in the study and control of specific diseases have appeared in tremendous number. Among these some of the more important can best be noted under the respective diseases.

Advances in *malariology* have been outstanding, so much so as to raise the hope that world-control of malaria is a possibility.

In chemotherapy[2] Paludrine (N_1-para-chlorophenyl-N_5-isopropyl guanide acetate) has been developed by Fairley,[2] et al. in an extensive research involving 500 human volunteers from the Australian army at Cairns, Australia. Fairley concludes that "paludrine is superior to all known anti-malarial drugs, as, in non-toxic dosage, it is a complete causal prophylactic in falciparum malaria." It shows highly lethal action on pre-erythrocytic forms of *Plasmodium falciparum*, and a single dose of 50 to 100 mg. given orally two to five days after exposure to infective bites, provides complete protection. In *vivax* malaria, paludrine in all cases acts as a partial causal prophylactic but complete eradication of extra-erythrocytic forms does not occur regularly, so that overt attacks are apt to follow discontinuance of the drug. Paludrine quickly controls clinical attacks of falciparum malaria and produces complete cure. In

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vivax overt attacks, radical cures have not yet been determined. Paludrine does not kill sexual forms in the human carrier but it does sterilize these forms in the mosquitoes fed on human blood containing sexual forms of both *vivax* and *falciparum* as early as one to two hours after the first dose of the drug is taken. This action persists for a variable time until the drug has been eliminated. Paludrine is remarkably free of toxicity, and there is a wide margin between therapeutic and toxic dosage. No example of idiosyncracy to the drug has been seen thus far. In non-immunes a single dose of 100 mg. may terminate a clinical attack in both *falciparum* and *vivax* malaria. In *falciparum* infections it is a true causal prophylactic if given within two to five days after infective bites in a recommended dosage of 100 mg. twice weekly. In *vivax* infections 100 mg. once each week controls relapses indefinitely.

Chloroquine (7-chloro-4(-4 diethyl amino-I methylbutyl amino) quinoline), like paludrine, seems superior to atabrin, in that it causes no gastro-intestinal or cerebral symptoms, and no skin pigmentation; it brings faster disappearance of clinical symptoms; and, in *vivax* infections, relapses are fewer and at longer intervals. Full treatment of an overt attack consists of 600 mg. orally on the first day, followed by 300 mg. on each of the three successive days. For suppression 300 mg. once each week is sufficient.

Pentaquine (6 methoxy-8-(5 isopropyl amino amyl amino)-quinoline) is reported more powerful than quinine or atabrin.[4] Its use in man has been limited almost completely to treatment of *vivax* infections under experimental conditions in the South Pacific. It is too toxic for continued suppressive use. A daily dose of 60 mg. of the base (80 mg. of the di-phosphate) given together with 2.0 grams of quinine in divided doses at four-hour intervals for 14 days, is radically curative in *vivax* infections. The maximal daily dose is 60 mg. It must be given under strict medical supervision, preferably in hospital. Racial toxicities and optimum dosage for children are not yet certain. Pentaquine is equal to plasmochin in activity and half as toxic.

Atabrin has proved to be a successful suppressive in dosage of 100 mg. daily. Overt malarial attacks practically never break through. It can replace quinine except under special conditions. Its continuance for a minimum of one month eliminates practically all *falciparum* infection. Its discontinuance is usually followed by relapses of *vivax* infections. Overt *vivax* attacks are controlled by the standard dosage of 1.0 gram in five divided doses in 30 hours, followed by 100 mg. three times daily for five or six days. The hydrochloride can be used intra-muscularly for the same indications as intravenous quinine. It causes harmless yellow pigmentation of the skin and often gastro-intestinal symptoms which are largely preventible. Suppressive treatment with atabrin requires discipline and training. When it is used constantly, even extreme so-called triggers for overt attacks (such as exhaustion, chilling, etc.) do not break through into clinical attacks of malaria.

An extra-erythrocytic stage of malaria has been demonstrated in six bird malarias, and circumstantially proved in man. This stage follows the quick disappearance of sporozoites after their inoculation by the mosquito and precedes the first appearance of ring-forms in the red cells. Recently it has been postulated that cyclical development in this fixed tissue stage is closely related to persistence of malarial infection and malarial relapses. Sapero[5] says "A prolonged period of fixed tissue development with repeated partial expulsion of parasites would lead to a relapsing disease, and to its termination only when all the parasites are expelled." This is the general situation in *vivax* malaria. Difference between strains of one plasmodial species would cause difference in fixed tissue cycles and in clinical patterns. In therapy, quinine, atabrin and chloroquin act on plasmodial stages in red cells, while plasmochin, paludrine and pentaquine act chiefly on fixed tissue stages. This explains the failure of atabrin to cure *vivax* malaria. This concept is the basis today of malarial therapy.

Entomologic control has been vastly improved by expert technical organization and supervision, and the use of new larvicides and insecticides. Fuller knowledge of mosquito breeding habits has been applied on the basis of local entomologic studies. DDT has permitted effective larvicidal campaigns and also direct destruction of adult mosquitoes in significant quantities. Both are possible with lighter applications of DDT than of older drugs. In adult mosquito destruction, spraying of housing interiors and impregnation of bed nets have been developed effectively. Adult eradication has become a valuable adjunct to mosquito control and of primary value where cost and inaccessibility make larvicidal methods difficult or ineffective. The prolonged residual action of DDT is utilized in aerosols which are at the same time insecticidal and larvicidal.

The spread of new vectors in an area is now well curbed by new spraying methods for planes and ships and control of ports and airfields.

Insect control in general with preparations of DDT and similar substances has made possible the rapid destruction of mosquitoes, flies, lice and other vectors and intermediate hosts. The result is the ability quickly to control the spread of malaria, filariasis, dengue, enteric fevers, sandfly fever, louse typhus, relapsing fever, bartonelliasis, leishmaniasis and other diseases. Soon to be on the market, are *Rhothane*, one-fourth as toxic as DDT for warm-blooded animals and more powerful as a mosquito larvicide, and *Lethane*, a safe and effective household insecticide for mosquitoes, roaches, bedbugs, weevils, clothes moths, flies and fleas.

A new *raticide* has been discovered in sodium fluoro-acetate which is highly lethal to these rodents but is also extremely dangerous for domestic animals and man.

Insect repellents have important additions in di-

methyl phthalate, dibutyl phthalate and benzyl benzoate. These have been used in various emulsions to make clothing resistant to insects and to repel insects from the skin. They are effective for various periods of time against chiggers, mites, mosquitoes, cercariae of schistosoma, and flies. Clothing impregnated with benzyl benzoate, even after several launderings, still repels mites and is lethal for schistosomal cercariae. This drug is an effective treatment for scabies.

Penicillin has proved an efficient treatment for the tropical spirochetoses—yaws, pinta, lepto-spirosis and relapsing fever. It is a valuable alternative when arsenic is contra-indicated. It is used in septic complications of typhus, where sulfa drugs are contra-indicated.

The story of sulfa drugs in *bacillary dysentery* was a dramatic war chapter. Sulfadiazine by preference is highly specific and also has been used in 1.0 gram doses daily as a prophylactic where infection is to be expected.

One striking and highly important discovery has been that para-aminobenzoic acid is a relatively specific remedy in *typhus fever* in the first several days of infection. It has been used in epidemic (louse-borne) typhus, spotted fever and scrub typhus. An initial dose of from 4.0 to 8.0 grams followed by 2.0 grams each two hours practically removes risk of fatality. It is important to give the patient sufficient bicarbonate of soda during the course of treatment to keep the urine neutral. Frequent blood counts should be taken during treatment, also, to make sure that a neutropenia is not developing. A blood plasma level of 30-60 mg. per 100 cc. is necessary. The use of para-amino-benzoic acid strictly contra-indicates the use of sulfa drugs. The Cox type of vaccine (egg yolk sac culture of rickettsia) and the Castaneda mouse lung vaccine have brought a substantial reduction in morbidity and have practically wiped out mortality from epidemic typhus in vaccinated persons. Louse control by DDT dusting of clothing and persons has added greatly to the effectiveness of typhus control. Impregnated clothing furnishes another protection.

In *leishmaniasis* several new drugs are in use. Best among these are *solustibosan* (sodium antimonyl gluconate) and, for the resistant types, *stilbamidine* (4, 4 diamidino stilbene). The latter is more toxic and requires more cautious use.

The therapy of *plague* is finally on a curative basis provided treatment starts on the first day before bacteremia sets in. The drug of choice is sulfadiazine which is given in an initial dose of 4.6 grams, followed by 1 to 2 grams each four hours for ten days or until the fever ends. After this period 0.5 gram should be given each three hours for 14 days after temperature is normal. Fluids and sodium bicarbonate must be adequate with each dose. In fulminating cases, sodium sulfadiazine is given intravenously. In addition anti-plague serum (rabbit or horse) should be given in full doses. Such combined treatment in bubonic plague gives an excellent prognosis. Fatalities are due to delay in starting treatment. Primary pneumonic plague, which is clinically a different disease, is almost always fatal in any case. Even vaccinated plague patients may die if not treated. It is always to be remembered that under natural conditions plague is the most probably fatal of all diseases.

Immunization against plague has resulted in increased attention to vaccination with attenuated or avirulent strains. Jawetz and Meyer[3] consider properly tested live vaccines as safe, and superior in immunogenic power in experimental animals to any killed vaccine available at the time. The Haffkine type of killed vaccine has been improved so that vaccinated persons have four times the protection of the unvaccinated. In Java, South Africa and Madagascar, the Otten type of living avirulent vaccine has given 80-90 per cent protection.

Plague control combining DDT for fleas, sodium fluoro-acetate for rats, vaccination, and early treatment, is highly effective.

Treatment of *cholera* has been put on a new plane by combining sulfadiazine with plasma. Used early, this method practically makes certain the recovery of the patient. The death rate from cholera in India in unvaccinated and untreated persons has been 40-70 per cent. Protection by killed vaccines made from virulent strains of vibrios has been about 90 per cent as compared with the high susceptibility of unvaccinated persons.

Folic acid has opened a new chapter in the cure of sprue and tropical macrocytic anemias.

Leprosy treatment on a definitive basis has been advanced, especially at Carville, by use of several drugs, combined, particularly promine diasone and streptomycin.

Miscellaneous advances have been made in numerous diseases, as examples of which the following may be mentioned. Species-specific methods for immunologic and serologic diagnosis have been greatly improved and made of practical use in louse and rat-borne typhus, scrub typhus, spotted fever, *Q* fever, bartonelliasis, amebiasis, kala azar, espundia, oriental sore and Chagas disease. Improved group-specific antigens have been discovered for the diagnosis of Bancroft's filariasis, onchocerciasis and the schistosomes. Concentration methods have been perfected for micro-filaria and schistosoma ova. It seems likely that effective vaccines will shortly appear for sandfly fever, dengue and scrub typhus.

CONCLUSION

The advances in tropical medicine since 1939 have been highly promising for the control of some of the greatest disease killers of mankind. Future needs and achievements to date make tropical medicine a valid specialty which justifies support in peacetime as it forced support in wartime. Simmons[6] furnishes an excellent review of the wartime contribution of tropical medicine: "This wartime experience with tropical diseases was a severe jolt to the complacency of those who formerly assumed that tropical medicine was

no longer of importance to the United States. It showed that the diseases of the tropics are still a hazard to Americans who travel or live in certain foreign countries. It showed that this country is still exposed to invasion by exotic diseases and indicated the importance of modifying quarantine procedures to meet the new methods of transportation. Finally, it emphasized the urgent need for a continuing program of research and training in order to control tropical diseases, both here in the United States, and in their tropical reservoirs."

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What's New in Cardiovascular Disease*

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PROGRESS in the field of cardiovascular disease during the past year has been delayed, as in other fields, by the readjustment period following the war, but some notable progress has been made. Several reports during the past year suggest that greater advance may be expected in the near future.

SYMPTOMS

Hunter[11] has reported a conspicuous absence of pain in Negroes with coronary artery occlusion, expressing the belief that dyspnea rather than pain is the usual initial symptom in coronary artery closure in this race. Smith[20] has challenged this view vigorously and expresses the opinion that there is no justification for it.

ELECTROCARDIOGRAPHY

The most significant change in this field during the past year is perhaps a general appreciation of the importance of multiple precordial leads in the identification of myocardial infarcts, and the general recognition of the fact that we have been overlooking infarcts in the past by failure to use more than a single precordial lead.

TREATMENT

Subacute bacterial endocarditis: Agreement is now fairly general in regard to the principles of treatment of this disease and has been well expressed by Hunter.[10] Anticoagulant therapy is now regarded as contra-indicated. Identification of the organism, in vitro testing of its sensitivity to antibiotics, and the production of a blood level of drug four to five times that required to kill the organism in vitro are now regarded as fundamentals. Frequent injections of drug as often as every one to two hours are regarded as essential with constant intramuscular drip preferred by some. The minimum period of treatment should probably be three weeks. With adherence to these rules, it should be possible to cure about 90 per cent of the cases.

Salicylates in rheumatic fever: The value of salicylates in rheumatic fever continues to be recognized, but the intravenous route for their administration is no longer considered to offer any advantage over the oral route.[8]

Rice diet in hypertension: Kempner[12] has reported further experience with a diet consisting of rice, fruit, and sugar. Among 222 patients improvement was noted in 62 per cent. Lowering of blood cholesterol levels, reduction in heart size, improvement in the electrocardiogram, and retinal changes were reported.

Low sodium diet in congestive failure: The importance of this diet in mobilization of fluid is becoming generally appreciated to the gratification of patient and doctor alike. A review by Wheeler, Bridges and White, followed by a discussion by Schemm, is to be found in a recent issue of the *Journal of the American Medical Association*.[21]

Dicumarol in acute coronary occlusion: Nichol and Page[14] and Peters, Guyther and Brambel[15] have reported the prevention of emboli, both pulmonary and arterial, following coronary occlusion by the use of this anticoagulant and have indicated that mortality is probably reduced. At the present time, however, the widespread use of the drug in this connection is probably to be discouraged[19] because of the theoretical hazards and expense, and because carefully controlled studies to define the indications and contra-indications of the method are now being carried out by a committee of competent observers appointed last spring by the American Heart Association.

*Presented as a part of the symposium discussion, "What's New," before the Section on General Medicine at the 76th Annual Session of the California Medical Association, Los Angeles, April 30-May 3, 1947.

Cytochrome C: This substance, prepared from beef heart, has been demonstrated by Proger and Dekaneas [17,18] to be effective in promoting the utilization of oxygen by tissue. Preliminary reports indicate that it may be useful in combating shock and the cerebral and myocardial effects of anoxia. Reports on its use in angina pectoris and myocardial infarction may be expected in the future.

Rutin: This glucoside, coming chiefly from tobacco and buckwheat, is said to decrease capillary fragility and has thus been used in an effort to prevent the cerebral vascular effects of hypertension. A statement [6] by the Council on Pharmacy and Chemistry of the American Medical Association, in which it is pointed out that no such increased capillary fragility has been regularly demonstrated in hypertension, should be read by those contemplating the use of this substance.

Histamine: Histamine, elaborated when histidine and ascorbic acid are administered together, has been used by Wirtschafter and Widmann [22] in the treatment of obliterative peripheral vascular disease with reported results warranting further investigation. Application of the method to patients with coronary artery disease and hypertension is under investigation with no results reported to date.

Surgery in congenital cardiovascular disease: Operations on the sympathetic nervous system in the treatment of hypertension continue to be widely applied.

Surgical ligation and division of the patent ductus arteriosus are now well established procedures.

In the treatment of Tetralogy of Fallot and other forms of pulmonary stenosis,[3] the surgical creation of an artificial ductus arteriosus, by the anastomosis of an innominate, carotid or subclavian artery with the pulmonary artery, is assuming its place. This so-called Blalock [4] operation has been altered by Potts, Smith and Gibson [16] by the production of an opening directly between aorta and pulmonary artery, thus eliminating the need for sacrificing a large systemic artery.

Surgical excision of coarctation of the aorta has now been performed in a small number of patients [7,9] with exceedingly promising results in relief of the hypertension in the upper extremities and the restoration of a normal circulation to the lower extremities.

Successful closure of experimentally produced interauricular septal defects in dogs has been reported by Cohn.[5]

Thrombo-embolic disease: The debate on the indications for anticoagulants and for venous ligation in an effort to prevent pulmonary emboli arising from phlebothrombosis and thrombophlebitis continues to be vigorous, with much to be said for both methods.[1,2,13]

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What's New in Syphilis*

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Penicillin is still the newest thing in syphilis. It is not actually very new as it has been in use for more than four years, but since the evaluation of antisyphilitic therapy is a very slow, tedious and uncertain process, we are just beginning to learn what can be expected of penicillin.

Evaluation of therapy in syphilis must be carried out on a different basis than in most other diseases because it has to be done in reverse. If a patient with syphilis is treated and subsequently remains well for a year or two, there is no evidence that he is cured, but if any manifestations of the disease reappear, it is clear that the treatment has failed. Arrest or cure in syphilis cannot be claimed until a patient has died without having developed any further evidence of the infection. So, in order to draw conclusions within a reasonable period of time, we are forced to compare the effectiveness of different treatment schemes according to the relative incidence of failure.

Early detection of treatment failure is possible only in early syphilis and the clinical evaluation of any new antisyphilitic agent must be initiated at this stage of the disease. The recurrence of lesions of syphilis, or of strongly positive serologic tests after previous negativity, the persistence of strong positive tests for a year after treatment or the development of clinical or serologic evidence of nervous system involvement, all indicate failure. The frequency of such events after the treatment of syphilis with penicillin is the principal basis for the determination of the value of penicillin and of the most effective methods for its administration.

The most extensive investigation of penicillin in early syphilis has been carried out under the direction of the National Research Council and later the National Institute of Health with the cooperation of the army and the navy and some forty civilian clinics scattered throughout the United States. About a year ago, the material from this investigation was summarized and it appeared that the position of penicillin in the treatment of syphilis was settled. About 10,000 patients with early syphilis had been treated, with a variety of treatment schemes, and had been observed for slightly over a year. The results led to the development of certain principles of penicillin therapy upon which most of our subsequent treatment has been based.

In brief, these principles were that the total dose should be at least 2.4 million units, that the injections should be given at intervals of not over three hours, that the treatment should occupy a period of not less than seven days and that small amounts of arsenoxide and bismuth should be given in addition, since this was shown to decrease markedly the incidence of treatment failure with only a moderate increase in risk.

Recently the results of this investigation have been reviewed again with the number of cases increased to 15,000 and the period of observation to almost two years. The conclusions reached as a result of this re-survey are indeed startling. Everything that we thought we knew about the treatment of syphilis with penicillin last year now appears to be wrong. The total dose is of little consequence, the same results being obtained with anything from 1.2 to 10 million units. It makes no difference whether the injections are given at intervals of two, four or six hours, and the time of treatment may be four, seven or fifteen days. Of still greater importance is the demonstration that the addition of arsenic or bismuth, either combined or separately, adds nothing to the effectiveness of penicillin therapy, and since it does definitely augment the risk, the combination of these drugs with penicillin should be abandoned in the future.

The most alarming conclusion from this treatment survey, however, is that the total incidence of failure after penicillin therapy is almost 30 per cent no matter what scheme of treatment is used. This is a poor record in comparison with many of the older treatment regimes using arsenic and bismuth, and the question arises whether or not we can justify the use of penicillin when it results in a failure rate of such magnitude. I think we can on the basis of two factors that must be considered but cannot be expressed in figures.

The first of these is toxicity. Penicillin is completely innocuous and thereby differs from all other antisyphilitic agents which are essentially dangerous. Secondly, penicillin treatment can be completed within a period of a few days so that practically every patient who starts the therapy completes it.

The only type of treatment that competes with penicillin in time of administration is intensive arsenotherapy where curative doses of arsenic are administered in a period of five to ten days. The risk of this treatment is exceedingly high and although the failures are few among those who survive, the overall death-rate of 1/200 practically eliminates this type of therapy.

On the other hand, experience has shown that the older treatments fail largely because only about 35 per cent of those who start ever go on to completion. Those who complete the older treatment are probably better off than those who take penicillin but for those who fall by the wayside, penicillin would have been infinitely better.

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On the grounds, therefore, that penicillin therapy can be completed in every case in which it has been started and that its administration is practically devoid of danger, I think it is still the treatment of choice in early syphilis in spite of its high rate of failure. This opinion is based partly on the fact that an initial failure in treatment does not indicate the impossibility of final cure. There is no evidence that syphilis can become resistant to penicillin and the great majority of patients who have required retreatment have responded perfectly well to subsequent courses of penicillin and have, for the most part, remained permanently well. However, because of the frequency of relapse after penicillin, it is vital that patients treated with it be followed with great care. They should be examined physically for lesions of the skin and mucous membranes at intervals of not over one month for the first year and every few months after that for several years. They should also have periodic serologic tests, preferably by some quantitative technic, taken at the time of their physical examinations.

In late syphilis, we know less about penicillin therapy than in early syphilis. It appears to be quite useful in neurosyphilis of various kinds and is of particular value because it not infrequently is effective in cases which would be expected to respond only to fever therapy with its very much greater risk.

Penicillin seems to be better than anything we have ever had for the treatment of syphilis during pregnancy. It will almost invariably protect the child regardless of the duration of the pregnancy or of the stage of the infection in the mother. It is probably not indicated in late latent syphilis and we would not expect it to have any great effect on the Wassermann reaction because in its widespread use in late neurosyphilis, it has been shown to be relatively ineffective in producing a negative serologic test in the blood. In particular it should not be used in a final attempt to reverse a blood Wassermann that has remained positive in a patient who has already had adequate therapy of the conventional type.

DISCUSSION AND QUESTIONS AND ANSWERS

I have more questions here than I can answer in detail and a number of which I am afraid I cannot answer at all. Several of them concern the effect of penicillin in oil and wax. I did not mention this because of the limited experience we have had with it, but one of the most encouraging results of the penicillin in syphilis study is that penicillin in oil and wax appears to be somewhat more effective than does soluble penicillin. In this study, the total dose was 4.8 million units or more, usually given in daily doses of 600,000 units each. A more prolonged period of observation may change this impression, however, as it did in the case of the soluble preparation.

There are several questions about the time of retreatment after an initial failure. Retreatment should be started as soon as the failure is evident. If there is only a serologic relapse, it must be confirmed by the examination of another specimen of blood, before treatment is begun. If the only evidence of failure is the persistence of a positive serologic test, the treatment should not be repeated unless a strongly positive test persists for at least a year. Retreatment may be carried out with penicillin in augmented dosage, with conventional arsenic and bismuth therapy, or possibly some combination of the two.

The questions concerning the time that must elapse before sexual intercourse or marriage may be permitted after penicillin therapy are difficult to answer. Because of the high incidence of relapse, there is no period of time that will eliminate all possibility of transmission. Most infectious relapses occur within the first six months after therapy and most of them are preceded or accompanied by serologic relapses. Therefore, if we are to be reasonable about it, and will admit the impossibility of absolute safety, it seems to me that intercourse may be permitted with very little risk of transmission in the case of a patient whose blood has become negative and has remained so, but not for the first six months after treatment has been completed. If the patient is a male, a condom should be used, since the infection is occasionally transmitted by the seminal fluid in the absence of visible lesions. If the patient is female, the sexual partner should use chemical prophylaxis after each intercourse as an added protection.

Several physicians have asked how soon the blood will become negative after penicillin treatment. Usually two to three months elapses between the institution of therapy and the reversal of the blood tests. Even though the treponema pallidum has been eradicated by treatment, reagin will persist in the blood for some time and one should not expect an immediate reversal. Occasionally, as long as a year elapses before the blood becomes negative although quantitative tests will usually reveal a steady decline in serologic titer.

I have one question about the published results of the recent re-evaluation of penicillin in syphilis. The material was presented at a meeting of the Syphilis Study Committee of the National Institute of Health in Washington, D. C., on April 17, 1947. It has not been published as yet, and as to whether or not it will be I have no information.

What's New in Endocrinology*

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PROGRESS in endocrinology is toward incorporation with internal medicine. Endocrinologists are realizing as research goes on that their field is the same as that of internal medicine. Whereas in the past the problems of growth and sexual function occupied a great portion of endocrine thought, now it becomes evident that all phases of biochemistry and physiology are in part controlled by endocrine function. Most recently the domain of immunology has been invaded with the brilliant thesis that the immune globulin production from lymphoid tissue may be dependent on the "S" hormone of the adrenal cortex. This is an example of the development of endocrinology from its period of attention to pathetic circus exhibits of specimens of abnormal growth or sex disorder to its present work in hypertension, cancer, metabolism, cardiology, and immunology—in short, in the whole field of internal medicine.

Coincident with this growth, the practice of endocrinology will grow away from treatment in the form of "shots." Particularly in the field of gonadal hormone deficiency, the new chemical forms permit substitution therapy by oral medication that is extremely potent, truly physiological, continuous in action, of life-long effectiveness when necessary, and, lastly, economically possible for the patient. The practice of "shot" treatment for the menopause is no longer necessary and should be abandoned.

To enumerate the recent progress according to the individual glands and their hormones:

PITUITARY

The monumental work of Professor Herbert M. Evans at the University of California on the pituitary hormones was displayed by him and his associates at the 1946 A.M.A. convention. This group of investigators has shown the anterior pituitary hormones to be individual protein bodies with characteristic physical and chemical properties. This basic data provides a starting point for assay which will influence all future application of pituitary preparations to treatment.

THYROID

The work of Dr. James H. Means and his associates of the Harvard Medical School has resulted in several extremely important steps in the diagnosis and treatment of thyroid disease. An isotope of iodine which is radioactive, prepared with the cyclotron or with the atomic energy pile, can be given by mouth in a single dose in small amounts to a patient with hyperthyroidism. This is tasteless: it is apparently also harmless to the general digestion and circulation. Following the channel of normal iodine physiology, it is very rapidly absorbed by the diseased thyroid and, being stored there, gives off its beta radiation which destroys the diseased thyroid tissue. Recently, a reliable report that thyroid cancer metastases have been depressed by the same isotope has appeared. A moderate number of patients with hyperthyroidism have been treated with radioactive iodine in this manner with success. If no harmful sequelae appear as time passes, this would seem to be a most effective and simple method of destroying thyroid tissue. More general distribution of the radioactive isotope from the atomic energy pile is now available.

In addition to this astounding development, progress in chemotherapy of hyperthyroidism with thiouracil derivatives continues. 6-N-propyl-thiouracil has been extensively tried in clinical investigation throughout the country. It will be on the market in the near future. This substance has the property of inhibiting the formation of thyroid hormone. The incidence of toxic effects, particularly those on the bone marrow, with this form of thiouracil is about three per cent. It is effective in controlling the excessive production of thyroid hormone until the primary disease stimuli have died out. Divided daily dosage and frequent observation of the blood for months at a time are required in this form of therapy. Nevertheless it is effective.

It must be realized that neither the internal radiation therapy of radioactive iodine nor the hormone production inhibiting action of propyl-thiouracil represents an advance in the etiology of hyperthyroidism.

DIABETES

In diabetes mellitus, the proofs of the etiologic importance of hyperglycemia have recently been summarized by Ricketts. Lukens and Dohan have shown that permanent diabetes can be produced in animals simply by the repeated intraperitoneal injection of sugar. This is the last of a series of procedures leading to diabetes in animal experimentation, each characterized by hyperglycemia and each ineffective in its result if the hyperglycemia is controlled either by diet, insulin, or phloridzin. It would seem inescapable, then, that chronic hyperglycemia was indicative of a condition which would lead to progressively more severe diabetes.

In diabetic management the use of mixed regular and protamine zinc insulin as recommended by Colwell in adjusted proportions would seem to be a significant advance.

Finally, public health agencies are conducting mass studies for glycosuria and hyperglycemia as a method of early diagnosis and public education for the control of the increasing incidence of diabetes.

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ADRENAL

A year ago Hans Selye summarized ten years' work on the adrenal hormones in connection with the alarm reaction. His work indicates that excessive amounts of the electrolyte controlling hormone of the adrenal cortex (desoxycorticosterone) will produce nephrosclerosis in animals indistinguishable from the disease in humans, and that this is associated with myocarditis. Fuller Albright of the Harvard Medical School and others have suggested that the gluconeogenic hormone of the adrenal cortex (corticosterone) through its protein catabolic function affects the immune globulin of the lymphoid tissue and is thus involved in resistance to infection. These two avenues indicate that the role of the adrenal in cardiovascular renal disease and immunity may be extremely important.

SEX HORMONES

There has been a great change of understanding of the sex steroid hormones as general metabolic agents throughout the body analagous to the adrenal hormones and as universal as thyroid or insulin. Albright has demonstrated the curative action of estrogen and androgen in osteoporosis following the menopause.

The striking repressive effect of high dosage estrogen upon prostatic malignancy and its metastases has recently been shown to have a converse analogue in the repressive action of high dosage of androgen upon breast cancer and its metastases. Grossly demonstrable regression takes place.

In the treatment of hypogonadism, chiefly the menopause, a great advance has occurred. In 1938 it was discovered that the addition of the ethinyl radical to the cyclopentanephenanthrene nucleus of estradiol would prevent the destruction of the hormone by the liver when given by mouth. The result is that amounts of estradiol of the order of magnitude of true hormone dose can be given by mouth with complete biochemical effect throughout the entire body. Five-hundredths (0.05) or less—actually two-hundredths (0.02)—of a milligram once a day by mouth is the dose required for control of the menopause. Larger dosage for other physiologic action, such as suppression of ovulation or control of menorrhagia, is easily given. This steroid hormone does not cause nausea in the therapeutic dosage range as does stilbestrol which is not a steroid. As a result the shot treatment of the menopause is unnecessary and the unfortunate psychological effects of this form of therapy can now be avoided. In the male hypogonad states, methyltestosterone—especially in the tablet for oral absorption—can be used for adequate treatment. Shot therapy with male hormone is no longer necessary.

Other metabolic effects of androgen administration show the metabolic function of the hormone. E. Kost Shelton of Los Angeles has shown the nutritional value of protein anabolism in premature infants given testosterone. They grow and survive the critical period of prematurity better than untreated infants. Androgen is of advantage in some cases of Addison's Disease. The use of androgen in angina pectoris continues to find clinical support.

SUMMARY

In summary, then, what's new in endocrinology is the chemical identification of the pituitary hormones, the radioactive isotope of iodine for thyroid disease and thyroid cancer, the demonstration of hyperglycemia as one cause of diabetes, the connection of the adrenal cortex with cardiovascular renal disease and immunity, the preparation of the sex hormones in an extremely pure and potent form for oral use, and the recognition of the sex hormones as general body metabolic agents of great and varied function.

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What's New in Allergy*

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THIS presentation will consider: (a) Anti-histaminic drugs; (b) radon seed therapy in allergic disease of the respiratory tract: (c) treatment of penicillin and serum reactions.

ANTI-HISTAMINIC DRUGS

In 1927, Lewis [4] postulated that a histamine-like substance, which he termed H substance, is liberated in the tissues at the site of an allergic reaction. Previously, in 1911, Dale and Laidlaw [2] claimed that the injection of histamine into animals produced typical anaphylactic shock. Since the appearance of those two reports, there has been much interest and activity on the part of chemists and other workers in an effort to discover an anti-histaminic substance which would serve as an inhibitor of both anaphylaxis and allergic reactions. Many such substances have been prepared and studied. In 1939, Halpern [3] reported a preparation labeled 2399 R P, later named antergan. More recently, Bovet [1] and his associates reported a new derivative of this drug called neoantergan, which is claimed to be more effective than antergan.

During the past two years, several new synthetic anti-histaminic compounds have been reported by workers interested in this field. The most promising of this group are pyribenzamine, (pyridil-N benzyl-N dimethylethyl lenediamine hydrochloride) and benadryl, (B-dimethylaminoethyl benzhydryl ethes-hydrochloride). In addition, several new and untried preparations are now in our possession, upon which there has been inadequate clinical investigation to justify a report at this time.

The dosage of the anti-histaminics varies greatly from individual to individual. The average adult dose will range from 100 to 300 milligrams, and in children from 50 to 200 milligrams, per day. It is our experience that children tolerate the drugs extremely well and in proportionately larger doses than do adults. They are most commonly given orally in the divided dose of 25 to 50 milligrams. It has been our practice to advise administration of the drugs in the evening and morning, because of the side effects.

Side effects of the anti-histaminics, in the order of their frequency, are drowsiness, weakness, stupor, confusion, vertigo, numbness, irritability, palpitation, hot flashes, indigestion, nausea, bad taste, dry mouth, blurred vision, and aggravation of allergic symptoms.

The toxic effects of the drugs are not particularly dependent upon the size of the dose. Symptoms produced by small dosages may be severe enough to warrant discontinuance. One cannot anticipate a predilection to toxic reactions. In general, response to the drugs is either very marked with a very definite relief of symptoms, or there is no effect whatever upon the symptoms. There is no intermediate effect.

RESULTS OF TREATMENT

Bronchial Asthma. Most observers are in accord that the anti-histaminic drugs have very little effect on bronchial asthma. In the pollen sensitive asthma, nasal symptoms may be controlled, but the asthma is not influenced. Several writers report the aggravation of symptoms by the drugs, and this was noted on several occasions in our own practice.

Hay Fever. The patient may receive symptomatic relief from the administration of these drugs. Such relief, when it occurs, is usually within a few minutes, but it lasts for a very limited period, usually three to eight hours. Such relief from symptoms bears no relationship to the dosage of the drugs. These drugs have been used either with or without specific pollen desensitization.

Allergic Rhinitis (Perennial). In this condition there has been less relief of symptoms obtained from the use of these drugs. Nasal blocking has not been influenced, particularly when nasal polypi were present.

Acute Urticaria. This is the field in which this group of drugs is most useful. Prompt and complete relief can be expected in from 5 to 15 minutes after they are administered. However, the drugs must be continued at intervals of three or four hours until the attack has expended itself.

Chronic Urticaria. Use of the drug in cases of chronic urticaria does not give the spectacular response observed in acute urticarias. Relief is obtained for only a few hours at most, and invariably there is a recurrence of the symptoms with discontinuance of the drugs.

Allergic Dermatitis. The drugs are definitely indicated to help control itching in both infants and adults suffering from the acute forms of this disease. In the chronic forms, relief from pruritis can be expected in about 50 per cent of the cases. Itching usually recurs with discontinuance of the drugs.

Penicillin Reactions. The drugs are indicated for the relief of itching, urticaria and arthralgia which may occur following the administration of penicillin. It may be necessary to continue the drugs over a period of weeks before the pruritis entirely disappears.

Both pyribenzamine and benadryl have been considered generally, since both drugs seem to have identical therapeutic values. Their side effects are the same, and their value as anti-histaminics in the management of allergic manifestations, with the exception of a few individual variations, seems to be the same.

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It is evident that these drugs are of limited value, because at their best they are only palliative remedies and do not produce permanent benefits. They are ineffective in many of the allergic manifestations. One should not minimize the toxic effects of these drugs and the many and frequent undesirable symptoms they may produce. Allergic investigation should be continued and specific allergic therapy be given during a period when anti-histaminic drugs are given for palliative relief.

RADON SEED THERAPY

Recently Ward [6] and his co-workers reported a preliminary evaluation of the effect of radiation in the naso-pharynx in the treatment of proved cases of asthma in children. This report is based on a study of 34 children all under 14 years of age. This group did not respond to the usual allergic therapy, such as elimination of offending foods from diet, removing from the environment of offending agents, and specific antigen therapy. Examination of naso-pharynx revealed much adenoid hypertrophy and lymphoid tissue. This group of 34 children was treated by application of two gram minutes of radon to each side of the naso-pharynx once each month for an average of four treatments. After treatments were completed, observation of the naso-pharynx revealed complete disappearance of lymphoid tissue in 23 out of 34 cases. The period of observation was six months to four years.

As to the immediate effects of radon irradiation on the respiratory tract, many of those treated complained of sneezing and nasal discharge 12 to 48 hours after treatment. In a number of the children, asthmatic symptoms developed several days after the first or second radiation, and some of these attacks were severe.

The results: 15 patients (44 per cent) were completely relieved of asthmatic attacks; five (15 per cent) were relieved so that they have only an occasional mild attack; three (9 per cent) show moderate improvement—they still have attacks of asthma, with the severity of symptoms reduced to one-half; while 11 (32 per cent) obtained no relief.

Ward and his co-workers advance, as a theory of the action of radon on the asthmatic person, that radiation (1) removes lymphoid tissue from the naso-pharynx, thus reducing infections of the upper respiratory tract; (2) lessens secretions post nasally; (3) changes bacterial flora; (4) may possibly change the threshold of absorption of allergens from naso-pharyngeal tissue after lymphoid tissue has disappeared.

Those who conducted the study admit that in cases in which an allergic condition is demonstrably responsible for the asthmatic attacks, radon irradiation does not change the inherent allergic state.

As I have had no experience with this treatment, I will comment only on the rationale of it. It has been my experience, and that of others, that tonsillectomy and adenoidectomy have seldom, if ever, resulted in permanent benefits in the allergic child. On the contrary, it has been frequently observed that following operation the first attack of asthma may occur, or, if asthma has already been in existence, the attacks will become either more frequent or more severe.

One cannot believe that the lymphoid hyperplasia and obstruction in the naso-pharynx could possibly be the cause of asthmatic attacks. Believing that the lymphoid hyperplasia as nasal polypi are not the cause but the result of the allergic state, one is at a loss for a satisfactory explanation of how radon irradiation could influence the allergic constitution or other mechanics that enter into the production of asthma. It will be interesting to note a follow-up with a subsequent report on the present group over a period of another year.

Although the report indicates careful and painstaking studies on a group of 34 children in which a large number have benefited, an opinion born of experience is that the hope that such contributions as radon therapy will alleviate allergic ills, like many another hope, will be shattered in the test of time, and that only through the discovery of basic causes and basic mechanisms of the allergic constitution will there be a final hope for the eradication and cure of allergic ills. Moreover, there is the immediate consideration of the possibility that harm might result should there be promiscuous use of radon by otolaryngologists or others unless they are skilled in radon therapy.

PENICILLIN

It is now a common observation that in a fairly large percentage of cases in which penicillin has been administered, reactions may occur simulating the delayed serum reactions from blood substitutes and anti-sera. Like the serum reactions, these delayed penicillin reactions are characterized by urticaria, myalgia, arthralgia, fever, adenitis and petechial rash. In many of these cases, the usual therapeutic agents such as epinephrine, ephedrine, calcium gluconate, amminophyllin and the anti-histaminic drugs do not give relief. This is particularly true when the myalgia, arthralgia and occasionally trismus is very severe. It was in this type of reaction that State and Wagensteen [5] explored the use of procaine intravenously. Their results were so surprising that this procedure was employed in all subsequent cases of serum disease. Urticaria of specific and non-specific origin, chronic bronchial asthma, rheumatoid arthritis and status angeosus were treated, with excellent results in urticarias and serum disease, but with no relief in bronchial asthma or rheumatoid arthritis. Our own experience with a small series of cases limited to serum disease and penicillin reactions was most satisfactory. We observed spectacular relief from symptoms, particularly the myalgia and arthralgia. This occurred within a few hours. Repetition of the treatment is frequently necessary because of a recurrence of symptoms. The greatest number of treatments given to any one patient was six and in one case a single treatment was sufficient to induce recovery. State and Wagensteen suggest the following technique for

administration: one gram of procaine HCl is dissolved in 500 cc. of isotonic solution of sodium chloride. It is given intravenously by the gravity method at a height approximately four feet above the bed level over a period of two hours. This prevents such untoward symptoms as dizziness, numbness, and flushing, which result from too rapid administration. A syringe containing amytal for intravenous administration should be available to control any sensitivity symptoms should they occur. We observed no symptoms of sensitivity.

If procaine is administered slowly, as has been suggested by State and Wagensteen, it is not particularly toxic. In view of the striking relief obtained by this therapy in our cases of serum disease and in the delayed reactions following penicillin therapy, we feel that intravenous procaine is a definite contribution in the therapy of these conditions.

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Recent Advances in Pulmonary Diseases*

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In the field of tuberculosis, one of the great diagnostic advances has been the widespread use of minifilm surveys of large groups of apparently healthy individuals. These surveys are being widely applied to the study of certain racial and economic groups where the incidence of the disease can be expected to be high. They are also being conducted quite generally in industry. A more recent application is the routine study by miniature chest films of all persons admitted to general hospitals. Experience has shown that between four and eight per cent of patients entering general hospitals for non-pulmonary complaints are found to have significant chest shadows requiring further study. Only a small fraction of these people were previously aware of disease of the chest. This procedure will give a much higher yield in positive findings than will routine urinalyses, blood counts, or Wassermann tests.

Many conditions other than tuberculosis are discovered in these mass surveys. Abnormal heart shadows, bronchogenic carcinoma, pneumonitis, bronchiectasis, and mediastinal and other thoracic tumors are also uncovered by such studies. Miniature film surveys have their limitations. It should be emphasized that a miniature film is only a screening procedure and not a diagnostic one. All persons who have abnormal findings by this method must have careful clinical, laboratory, and x-ray examination before a diagnosis may be made. Also, miniature films are not diagnostic for the early or moderate stages of pneumonoconiosis or silicosis. In industries suspected of these hazards, conventional films, preferably stereoscopic, are necessary.

The past few years have brought many refinements in the bacteriologic diagnosis of tuberculosis. No longer can we exclude tuberculosis by means of the Ziehl-Neelsen direct smear. If there is clinical or roentgenologic reason to suspect the disease, it may be necessary to resort to one of the more sensitive techniques for discovery of the organism. These include the use of gastric lavage, the washings of which are preferably combined with whatever sputum can be collected over a period of several days. The combined specimen should be studied by concentration, acid-fast culture, and animal inoculation. Occasionally it will be necessary to resort to bronchoscopic aspiration or lavage. Only by using these more sensitive procedures is it possible to establish a certified diagnosis at the earliest possible moment. Gastric lavage is also extremely useful in evaluating the progress of a case under treatment or observation. Periodic studies of this nature may detect an impending relapse long before it becomes manifest clinically or on the x-ray film.

Streptomycin is the most promising drug thus far found for the treatment of tuberculosis. It has been found most effective in acute exudative and ulcerative tuberculosis, also in acute hematogenous and lymphatic tuberculosis. Chronic fibrotic lesions of either bronchogenic or hematogenous type are influenced very little by this drug. Furthermore, streptomycin only temporarily suppresses the growth of the organism. After a comparatively short period of time, varying between two to six months, the baeilli

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become resistant to the antibiotic, although improvement may continue for a limited further period. It must be remembered that it is considerably more toxic than penicillin. There have been a few deaths due to renal failure apparently caused by tubular damage. Many patients have developed paralysis of the vestibular branch of the eighth cranial nerve, resulting in more or less marked disturbance of equilibrium. A considerable number of instances of deafness of varying degree have been noted. In some cases toxicity is now believed due to excessive concentrations of the chemical in the blood. The use of smaller doses and periodic determinations of the streptomycin blood level may reduce the incidence of toxicity.

While streptomycin shows great promise and has oftimes been spectacular in its effect upon human tuberculosis, it does not replace the standard treatment principles of bed rest, optimum nutrition, collapse therapy, or pulmonary resection. It is only an adjunct to the time-proven methods of treatment. The use of it will not collapse cavities, resolve empyemas, or dilate bronchial stenoses. The drug does, however, often make it possible for collapse therapy or pulmonary resection to be carried out on patients who otherwise would be unsuitable for or apt to derive no benefit from chest surgery, and it minimizes the complications of these procedures.

Since the beneficial effect of streptomycin is only temporary, it should be used in close conjunction with other proven methods of treatment such as bed rest, collapse therapy or chest surgery. All too often, improvement resulting from streptomycin therapy is ultimately lost because established methods of treatment were not used in close coordination with it. The best results will be achieved if chemotherapy is only a part of a specific plan for the patient under treatment.

CARCINOMA OF THE LUNG

The great reduction in the surgical mortality of pneumonectomy for bronchogenic carcinoma now makes cure of this disease practical. It was only a few years ago that the operative mortality for this operation was from 50 to 75 per cent. In a series reported by Jones covering the past five years, the surgical mortality has been slightly less than four per cent—only two deaths in 54 consecutive patients operated upon. However, of the patients referred to the surgeon, only 35 per cent were clinically operable, and only 20 per cent were actually operable upon surgical exploration. Therefore, 80 per cent of the persons sent to the surgeon were beyond help. The surgeons and anesthetists have made far greater advances in the operative treatment of bronchial cancer than the clinicians have made in the early diagnosis of the disease. The operative mortality has been reduced to a minimum, but the "diagnostic mortality" continues to be excessively high.

The more widespread and routine use of chest x-rays will be of great aid in suggesting a diagnosis of lung cancer. Bronchoscopy should be done in every case suspected of the disease. Nevertheless, a negative bronchoscopy does not by any means rule out carcinoma. About half of the patients with operable lesions can be diagnosed by bronchoscopic biopsy. In the other half the decision to explore the chest must be based upon the clinical and x-ray evidence. If the clinician can make a presumptive diagnosis of carcinoma, he should stand his ground and advise exploratory thoracotomy before it is too late. This procedure of itself is harmless and carries no operative mortality.

BRONCHIECTASIS

The medical management of bronchiectasis has been greatly enhanced by the advent of chemotherapy. The use of sulfonamides by mouth, particularly after acute respiratory episodes, and the administration of antibiotics, especially penicillin, and occasionally streptomycin, both parenterally and by nebulization, have done much to suppress infection and control sputum in bronchiectasis. These drugs should not be used haphazardly, but only after careful examination of the sputum to determine the type of organisms predominating. In some instances the disease can be converted into a "dry" bronchiectasis which will remain asymptomatic until the next respiratory infection.

The only real cure for bronchiectasis is lobectomy or pneumonectomy of the involved lung. Unfortunately most patients are found to have bilateral disease, and are apt to have inoperable lesions when they are first seen by the chest physician or surgeon. Here again, early diagnosis is the crux of the problem. The complications and the mortality of operation have been greatly reduced in recent years. Advances in anesthesia and in the technique of operations on the chest are partly responsible for this improvement. The use of sulfonamides and antibiotics pre- and postoperatively, and their topical use at the time of operation, along with improved methods of closing the bronchial stump, have greatly reduced the complications of empyema and broncho-pleural fistula which were formerly so very frequent. These improvements have made it feasible to close the chest tightly at the time of operation and to secure early re-expansion of the remaining lung, thereby preserving a greater degree of pulmonary function than was heretofore possible. It is hoped that eventually bilateral or multi-lobar resections will be feasible in selected cases of bilateral bronchiectasis.

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DISCUSSION AND QUESTIONS AND ANSWERS

DR. SMART: The first question: "What is the value and feasibility of bronchial secretion smears for the diagnosis of carcinoma?"

In every case where carcinoma is suspected, and where nothing which can be biopsied is found bronchoscopically, secretions should be aspirated and studied cytologically. Frequently the diagnosis can be made in this way. You may have seen the report which Dr. Clerf made at the A.M.A. meeting in 1946 upon the use of this technique. However, a negative result by this method does not disprove a presumptive clinical diagnosis of bronchial carcinoma, and if the clinical and x-ray evidence strongly favor such a diagnosis,

then exploratory thoracotomy should be done. Usually the thoracic surgeon will be able to make the diagnosis once he is able to palpate the lesion. He can then proceed with resection if the lesion is operable.

Second question: "How does streptomycin act on the tubercle bacillus?"

We know that the drug is bacteriostatic, and not bacteriocidal for the bacillus. We do not know just how it inhibits the growth of the organism.

Next question: "What about the use of streptomycin in the treatment of endobronchial tuberculosis?"

Streptomycin has proven extremely effective in the treatment of ulcerative tuberculous tracheo-bronchitis. Before the advent of this drug, we had no satisfactory treatment for this most serious complication. Ulcerative lesions of the epiglottis, larynx, trachea, and bronchi have been noted to heal in as short a time as three weeks. These remarkable results have been achieved by using the drug either by inhalation or parenterally. The latter method is preferred, especially if there are parenchymal lesions which one hopes to affect. Furthermore, the topical use of streptomycin is more likely to produce sensitization to the chemical.

The next question: "How would you select your tuberculous cases for lobectomy or pneumonectomy?"

This is an important question, and one that could make an entire paper by itself. There is no doubt that pulmonary resection has a very definite place in the treatment of tuberculosis. However, this place is somewhat limited and we must remember that even with the aid of streptomycin both pre- and postoperatively, the surgical mortality and the complications following pulmonary resection for tuberculosis have been, up to the present time, considerably greater than in the case of resection for carcinoma. I believe that the results from this procedure in the treatment of tuberculosis will be greatly improved as the indications are more carefully worked out and cases are more ideally selected. In my own small series of 13 patients, seven of whom had pneumonectomy, and six lobectomy, all operated upon by J. C. Jones and associates, there has been no surgical mortality, and no serious complications such as empyema, broncho-pleural fistula, or contra-lateral spreads. These patients were carefully selected, and many of them had the benefit of streptomycin before and after operation. In each instance it was felt that there was no other satisfactory treatment for the specific lesion present.

In general, the following types of cases should be considered for pulmonary resection: (1) those in which there are giant cavities, such as an excavation of an entire lobe or an entire lung, with a good contra-lateral lung; (2) the so-called "blocked" or partially blocked cavity is better treated, in my mind, by lobectomy, and occasionally by pneumonectomy; (3) a lobe or a lung which is the seat of tuberculous bronchiectasis is better treated by pulmonary resection than by collapse therapy; also, post-tuberculous bronchiectasis, where the tuberculosis is healed but the bronchiectasis remains, is better treated with resection than any type of compression therapy; (4) occasionally we see cases of repeated and intractable pulmonary hemorrhage from a lobe which is apparently adequately collapsed by means of thoracoplasty, which can be successfully treated only by resection; (5) in cases in which the bronchus supplying a lobe or a lung shows a high degree of stenosis, with or without atelectasis, resection should be considered, providing the bronchoscopist feels that the bronchus is healthy enough to insure good healing of the stump. Other indications for pulmonary resection in tuberculosis will develop as we attain more experience with this new but valued procedure.

What's New in Infectious Diseases*

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THE most important development of recent years in the field of infectious diseases was the introduction of sulfonamide compounds, penicillin and streptomycin which makes the present an era comparable in importance to that of Pasteur's time. So rapid has progress been that specific immune serums used for several serious infectious diseases were superseded by sulfadiazine therapy, which in turn was largely replaced by penicillin, all within the past decade. On the other hand, much of sulfonamide drugs and penicillin is wasted in conditions for which they have no value and for which they should not be given. Both sulfadiazine and penicillin at times cause trouble in the form of toxic and hypersensitive reactions and must be used with caution and judgment. Streptomycin has been disappointing in its failure to control typhoid and undulant fever, but it has value in certain other infections caused by bacteria not influenced by penicillin or sulfadiazine, particularly tularemia, tuberculosis and certain infections of the urinary tract. No specific treatment has been discovered for viral diseases.

Great increases of knowledge have been made in the viral diseases. They are now known to cause many more diseases than was formerly realized, particularly with regard to infections of the brain, the viral pneumonias, viral infections of the intestine (viral dysentery), of the liver (viral hepatitis), of the myocardium, and probably of the kidney (abacterial pyuria). The world-wide distribution of troops led to much new knowledge of malaria, cholera, dysentery, viral hepatitis, the rickettsial diseases and others. An ominous development was the preparation for aggressive and defensive biologic warfare. Intensive study was made to discover infectious agents capable of causing widespread disabling or fatal infections of man. Fortunately, no practical application has as yet been made. It is probable that more effective agents for biologic warfare are agents which cause epidemic diseases of domestic animals and food producing plants.

Accumulating evidence shows how BCG vaccine provides immunity against tuberculosis. Studies on the Indians of the Southwestern states and reports from Scandinavian countries show that the morbidity of tuberculosis is reduced among the vaccinated persons as compared with those not vaccinated. Para-aminobenzoic acid is a valuable therapeutic agent for typhus and Rocky Mountain spotted fever.

More detailed information concerning the new developments just discovered and others as well is given in Annual Reviews of Progress in Infectious Diseases.[1]

QUESTIONS AND ANSWERS

Dr. Reimann: Question: "Who reported the use of streptomycin therapy in dysentery bacillus infection, and just what were the results?"

The report was published I believe in December, 1946, in the Bulletin of the Army Medical Department. It was about that time at least and the results were reported, I believe, in only 11 cases with a favorable effect in eight.

Question: "How efficient are the sulfa drugs in the prophylaxis of relapse of rheumatic fever attacks?"

According to those who have applied this procedure, the incidence of relapse has been reduced, ostensibly due to the prevention of infections with hemolytic streptococci which incite attacks of rheumatic fever. However, others have questioned the validity of the statistics. There are other objections as well: (a) if the procedure is successful it must logically be continued during each cold season for many consecutive years. (b) prolonged therapy carries the risk of toxicity and sensitization, and of causing the development of drug-resistant strains of bacteria. Recent trial in England of penicillin given for the same purpose in only a few patients was said to be successful in reducing the number of relapses, but here again, prolonged therapy is subject to risks similar to those just mentioned.

Question: "Is there any therapy for the vertigo which occurs after prolonged use of streptomycin?"

No; the only treatment is to discontinue the drug.

Question: "With what drug or antibiotic would you treat streptococcic sore throat?"

In the vast majority of cases, which are mild anyway, no drug is necessary. Carefully controlled studies by Rantz's group and others show that neither sulfonamide compounds nor penicillin were useful enough in the average case to warrant their use. In severe cases with high fever, severe illness, cervical lymphadenopathy, and certainly if the blood stream is invaded, penicillin in adequate amounts over six days or more is recommended. The necessity for giving penicillin depends on clinical judgment.

Question: "May not the use of antibiotics in infectious fevers be overemphasized?"

Without doubt. It has been estimated that 80 per cent of penicillin now used is wasted for conditions in which it is known to have no effect; in cases which are undiagnosed; justifiably at times when the diagnosis is uncertain, and for other reasons.

Question: "Do you favor antipyretic therapy?"

Antipyretic drugs, as such, are no longer recommended for antipyresis alone, except in unusual instances of hyperpyrexia. Even then their toxic effects must be considered. Fever is best controlled by specific therapy with antibiotics or sulfonamide compounds when the causative agents are susceptible, or by physical methods of tepid or cool sponge baths.

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Early Personalities and Hygiene at the University of California

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THE importance of Hygiene as a special subject in the curriculum of the University of California has been recognized since the very beginning of the University. In the prospectus of the opening exercises at the University in the old buildings of the College of California in Oakland on September 23, 1869, courses in "Physiology and Hygiene" were announced as required both in the College of Letters and College of Agriculture. These courses were given to the students of the "Fourth Class-First Year" during the "second and third terms."

The College of Oakland which had been established in 1853 by Henry Durant merged into the University of California by approval of the Governor on March 23, 1868, and instruction began in Oakland in the autumn of 1869. Henry Durant became first president of the university. He was Professor of Greek, and the Register of the University for 1870 states that "Mental and Moral Philosophy is given to the most advanced classes in all the Colleges of Arts and the College of Letters, by the President of the University. Recent textbooks are used, supplemented by lectures." Dare we conclude that elements of what we now call "mental hygiene" were included in those early lectures?

The Registers of the University carry announcements of courses in "Hygiene and Physiology" and "Mental and Moral Philosophy" from 1870 to 1876. While no direct mention is made of the professor giving these early courses, it is implied from a part of his title that Dr. John LeConte, "Professor of Physics, Industrial Mechanics and Physiology," may have had a hand in their inception. Dr. LeConte is mentioned in the Register as a member of the Faculty of the Medical Department of the University.

In the Biennial Report of the Regents of the University for the years 1872-73, when Daniel C. Gilman was president, it is stated that "Lectures at the Mechanics' Institute in San Francisco are given by Dr. Ezra S. Carr, Lecturer on Physiology and Professor of Agriculture, Chemistry, Agricultural and Applied Chemistry and Horticulture." Two lectures are mentioned: one on "What We Breathe" and another on "What We Drink and What We Eat." "A similar course of lectures was also given at the Normal School in San Jose and several of the Professors also lectured in other parts of the State." This was probably the beginning of extension courses from the University and it is interesting to note that at that early date they dealt with subjects relating to Hygiene.

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The University Register for 1870 also records under "terms of admission"—"YOUNG LADIES: Young ladies are admitted into the University on equal terms, in all respects, with young men." It is refreshing to learn that young women were exposed to these compulsory courses in Hygiene in Mid-Victorian fashion from the early days of the University.

In 1870 a commanding figure in the annals of public health in California appeared on the scene in the person of Thomas M. Logan, M.D., who became the first Secretary of the California State Board of Health. In the April 15, 1945, issue of "California's Health," Guy P. Jones, retiring as Editor after serving with the State Department of Public Health for 23 years, wrote a delightful and informative article on "Hygiene Taught at the University of California in 1873" in which Dr. Logan played a leading role. This article, if read in the setting of other excellent articles in the series by Guy Jones entitled "Early Public Health in California," reveals the profound influence of Dr. Logan upon the development of Hygiene at the University as well as his grasp of the principles of public health. In his first biennial report for the years 1870-1871, issued in the name of the State Board of Health, he reveals that he had not only a firm grasp upon the principles of public health and hygiene, but also considerable administrative ability.

In his second biennial report for 1871-73, Dr. Logan, under date of July 1, 1873, addressed Governor Newton Booth as follows: "It affords me unqualified satisfaction to be able to state that in compliance with the expressed wishes of the indefatigable President of our State University [President Gilman who later became the first President of the Johns Hopkins University] the Regents have taken the initiative, not only in establishing a Professorship of Sanitary Science in the curriculum of the Medical Department, but also propose making it a part of this professorship to give such instruction to the students in the academic department, so that every graduating class can go out properly informed in the great art of preserving the individual and the public health." In this same report Dr. Logan presents a "Synopsis of special subjects constituting a course of lectures on Sanitary Science and its collaterals, proposed to be delivered during the junior and senior years of the students in the University of California, both in the academic and medical departments."

"STATE MEDICINE" IN 1873

In going over my old files I discovered a memorandum prepared in April, 1926, by Guy P. Jones

for Dr. John N. Force, in which he sets forth in considerable detail the various sections of the above Synopsis. It is very interesting to find that attention is to be given to "Laws of the Relations of Sex," "Mental Hygiene," "Domestic Hygiene," and "Public Health or State Medicine." Let us not entertain the idea that State or "Socialized Medicine" is a modern concept, as Dr. Logan in 1873 said "State, or as sometimes termed, political medicine, concerns itself but little relative to the cure of disease: the problem which it seeks to solve, is how disease may be averted: general conditions affecting health of communities or classes of people. . . ."

On June 2, 1873, Dr. Thomas M. Logan, then Secretary of the State Board of Health, was invited to accept the Chair of Hygiene in the Medical Department of the University, concerning which his brother wrote. "The Chair was created expressly for him." On July 1, Dr. Logan reported this to the California State Board of Health.

In the University Register for 1873-74, President Gilman announced under the section on "Medical School" that "the recent gift of a Medical College through the munificence of Dr. H. H. Toland of San Francisco will soon lead to the establishment of the Department." The influence and recommendations of Dr. Logan bore fruit almost immediately for we find in the Biennial Report of the Regents for 1873-74 under the announcement of the College of Medicine that he is listed with the members of the medical faculty as "Professor of Hygiene" and provisions for the courses which he recommended were being carried out. The following books were recommended for the hygiene courses: Huxley's and Youman's "Physiology and Hygiene." Parks' "Manual of Practical Hygiene." Hammond's "Treatise on Hygiene," and Mapother's "Lectures on Public Health."

That Dr. Logan's early efforts were recognized and appreciated is attested by the fact that he was selected to give the Valedictory Address at the Commencement Exercises of the Medical Department held in Pacific Hall, San Francisco, on October 29, 1874. In the course of this address pregnant with sage advice, he said, "While occupying, during the term just closed, the Chair of Hygiene, which was, through the wisdom of the Regents, and in accordance with my suggestions to the American Medical Association in 1871, constituted a requisite part of the curriculum preliminary to the Diploma now awarded you, while occupying this Chair, it has been my special province to explain the application of the laws of physiology and general pathology to the maintenance and improvement of the health and life of individuals and communities under the increasingly complex conditions of human existence."

Dr. Logan apparently held the Chair of Hygiene in the Medical Department until his death in 1875 when he was succeeded by Dr. F. W. Hatch, Professor of Principles and Practice of Medicine at Toland College of Medicine, who had taken his place as Secretary of the State Board of Health.

In the Biennial Report of the Regents of the University for 1877-79 under the Faculty of the College of Medicine appears the name of "F. W. Hatch, A.M., M.D., Professor of Public Hygiene." The University Register for 1878-79 announced that "The Science of Hygiene, which of late years has assumed so important a place in the curriculum of a medical education, has induced the Board of Regents to establish a Chair of Public Hygiene. The Permanent Secretary of the State Board of Health has been selected to fill this Chair." Accordingly Dr. F. W. Hatch was appointed "Professor of Public Hygiene."

The University Register for the following year (1879-80) records that "the course on Public Hygiene is a most interesting one, covering the whole subject of the duties of individuals and municipalities in the preservation of the Public Health." The course in "Hygiene" was announced each year in the University Registers from 1879-80 until 1884-85 as given by Dr. Hatch. The University Register for 1884-85 announced under the heading "Medicine and Surgery" the subject "Hygiene:—the principles of modern sanitary science and the practical methods of reducing the evil effects of unsanitary conditions. 32 lectures." "This Chair is now vacant through the death of Dr. Hatch." Dr. Hatch, therefore, continued to give the course in "Public Hygiene" until his death in 1885 when the Chair was declared vacated and apparently not filled again until 1898.

PHYSICAL CULTURE

From 1885 to 1890 courses in Hygiene, consisting almost entirely of didactic lectures were given in the Medical Department by Professor Washington Ayre. The University Register for 1888-89 chronicles the beginning of a "Physical Culture Department" at Berkeley, and states that, "the details of the Department are not yet arranged, but the intention is to require systematic exercises for the first two years of college. There will be general class exercises adapted to all conditions, and special training suited to the wants of those with deficient development."

"Physical Culture is in charge of an instructor in gymnastics, under the supervision of an experienced physician and its work is conducted in Harmon Gymnasium on the University Grounds. Dr. Payne, the Director of the Department examines the physique of each student and prescribes such exercises as benefit his condition." "Mr. Walter Magee, a trained instructor is in personal charge of the exercises in the Gymnasium." That hygiene was taught incidentally in this new department is to be inferred from the following announcement in the 1890-91 Register: "Physical Culture. Dr. Payne, Director of the Department. He makes a thorough physical examination of each student, conducts the taking of measurements, prescribes his exercise, and gives personal advice in matters pertaining to health and hygiene."

Courses in "Physical Culture" were announced each year in the University Registers from 1891-92 to 1893-94 with incidental mention of "Hygiene" taught in this department. No mention of "Hygiene," however, is made in the Register for 1894-95, but

an important announcement appeared that "Mary Bennett Ritter, M.D., is woman physician in the Department of Physical Culture." On June 30, 1891, Dr. Bennett married Professor William E. Ritter, who had a long and distinguished career in scientific pursuits at the University. Both of these individuals contributed a great deal to the scientific work of the University, some of which related to hygiene and public health.

In the University Register for 1895-96 under the caption of a "Course for young women" in the "Department of Physical Culture" it is stated that "During the year Dr. Mary B. Ritter will give to the women of the University an optional course of lectures upon the following subjects: (1) General Hygiene. The various functions of the human body. (2) Prevention of disease: aids to the injured: disinfection: avoidable deformities." In this Register appears for the first time the name of George F. Reinhardt, Assistant in Physical Culture, who was to play such an important role in the development of Hygiene at the University and in the beginnings of the Student Health Service.

No course in "Hygiene" was mentioned as being given by Reinhardt during this year, but the following years (1896-97) the Register announced: "Physical Culture. Lectures will be given by medical and surgical specialists on normal vision, hearing, personal hygiene, first aid to the injured, practice in bandaging, etc. Practical talks on diet, sleep, exercise, bathing, clothing, injudicious exercise, etc. will be given by the Director. . . . During the year Dr. Ritter [Mary B.] will give to the women of the University an optional course of lectures" (largely personal hygiene). "W. E. Magee, Assistant Professor, Director of Physical Culture. George F. Reinhardt, B.S., Assistant in Physical Culture."

It is seen that up to 1898 "Hygiene" had been given as a desultory course in various departments of the University. In the University Register for 1897-98 it was announced for the first time as a special subject in the curriculum as "*12. Hygiene*—a course of lectures on personal hygiene as related to physical culture. The subjects considered will include food, clothing, baths, sleep, care of the eyes, testing for normal vision and hearing, and the general care of the body. During the year lectures and demonstrations will be given on what should be done in case of accident. 1 hour. Second half." This course was offered under "Physical Culture" with the following teachers: "Arnold Abraham D'Ancona, A.B., M.D., Professor of Physiology and Histology and Medical Examiner and Lecturer in the Teacher's Course in Physical Culture; George F. Reinhardt, B.S., Assistant in Physical Culture." Dr. Reinhardt received his M.D. degree in 1900.

In the year (1898-99) Hygiene 12 was repeated except that it was extended to one hour throughout the year, and Dr. D'Ancona was appointed "Professor of Hygiene." Dr. Mary B. Ritter was announced to give an optional course of lectures for women. Up to 1905, courses in hygiene continued to be given in the "Physical Culture Department," whose name was changed that year to "Department of Physical Education."

In 1902 an advanced course had been given in Hygiene with laboratory work, microscopic and macroscopic examination of tissues and simple tests for impurities in air, water, and food. This course included household sanitation and plumbing. The course was given as 9A Bacteriology by Dr. A. P. Ward from the Agriculture Department. In 1903-1904 Dr. George F. Reinhardt was "Medical Examiner" and "instructor in Physical Culture." In 1904 he was appointed "Professor of Hygiene" and a separate Department of Hygiene was created which included Bacteriology. Dr. Ward who had been appointed Director of the State Hygienic Laboratory on the Berkeley Campus, and who had been giving courses in pathology and dairy bacteriology in the Department of Agriculture, was attached to the new Department of Hygiene. The curriculum in hygiene at that time included freshman hygiene for both men and women and two courses in bacteriology.

An important announcement appeared in the Register for 1904-05 as follows: "Hereafter students who are absent from any University exercise on account of illness must report to the Medical Examiner for a certificate of illness. This certificate the student must present to the Dean of the College." Professor George F. Reinhardt is mentioned as Medical Examiner for men. He is also announced as giving a one hour prescribed course in "Hygiene" throughout the year. Dr. Eleanor Storb Bancroft, M.D., is also mentioned as Lecturer in Hygiene and Medical Examiner for women. She gave a one hour course in Hygiene throughout the year, prescribed for all freshman women. During the next five years there were only minor changes in the hygiene curriculum.

Charles Gilman Hyde came into the Public Health and Sanitary Engineering field of the University in July 1905 when he accepted an appointment on the Engineering Faculty. Since 1909 he has held the Professorship of Sanitary Engineering in the University and has contributed materially to the development of Hygiene and Public Health as well as his own field of Sanitary Science. His cordial cooperation with the Department of Hygiene throughout all the years is an index to his sterling character and loyalty to high ideals of Public Health and Hygiene.

INFIRMARY ESTABLISHED

It should be noted that in 1906 Dr. George F. Reinhardt who was then Professor of Hygiene became the first University physician and established the University Infirmary, one of the first to be established on such a broad foundation in this country. After the San Francisco earthquake and fire in 1906 the laboratory branches of the University Medical School were removed from San Francisco to the Berkeley Campus. On December 4, 1909, Dr. Reinhardt married Aurelia Henry of Berkeley who later pursued a distinguished career as president of Mills College, and as a leader in civic and national affairs.

In 1910 Dr. Ernest B. Hoag became a member of the Hygiene Department and introduced courses in

school and public hygiene. At that time seven courses in bacteriology were offered and separate courses in milk, water, sewage disposal, infectious diseases, soil analysis, medical bacteriology, and research were announced.

The year 1911 may be considered as ushering in the revised and expanded curriculum in public health and school hygiene. At that time the public health major was established. Courses were offered in several departments of the University for this major, but ten units had to be taken in the hygiene department. Dr. John N. Force came to the faculty that year and he, together with Dr. George F. Reinhardt and Dr. Wilbur A. Sawyer, organized courses in public health laboratory, sanitary surveys, epidemiology, and public health administration. In 1911 bacteriology as a subject was separated from hygiene and the Department of Pathology and Bacteriology was created.

The State Hygienic Laboratory and the Departments of Hygiene and of Pathology and Bacteriology were housed in the same frame building on the Berkeley campus. The State Hygienic Laboratory was intimately associated with the Hygiene Department at that time and a cordial cooperation has always been maintained between them. Dr. Wilbur A. Sawyer, who was a member of the Infirmary Staff and had been appointed Director of the Laboratory, gave several courses in the Hygiene Department.

The announcement of courses of the University for 1911-1912 contains such an important development in Hygiene that it is given special mention here:

Staff:

George F. Reinhardt, B.S., M.D., Professor of Hygiene and University Physician.
Wilbur A. Sawyer, A.B., M.D., Director of State Hygienic Laboratory.
John N. Force, M.D., M.S., Lecturer in Hygiene.
Florence M. Sylvester, B.L., M.D., Lecturer in Hygiene.
Albert M. Meads, M.D., Infirmary Physician.
Romilda Paroni, B.S., M.D., Lecturer in Hygiene and Medical Examiner.
Eugene S. Kilgore, B.S., M.D., Medical Examiner.
Jacob C. Geiger, M.Ph., M.D., Assistant, State Hygienic Laboratory.

Teacher's Certificate: 18 units of upper division in applied courses bearing on hygiene.

Sanitary Inspection: 26 units of upper division work.

Professional Course in Public Health: The department has arranged a course of study equivalent to that which leads to the degree of Doctor of Public Health or Diploma in Public Health in many European and several American universities. (The Academic Senate has now under consideration the question of granting a degree in public health.) Courses open to students holding a degree of B.S. or its equivalent from a recognized college or university and requires the completion of 60 units in hygiene, sanitary engineering, nutrition, and allied subjects. Persons holding professional degrees in medicine or sanitary engineering may reduce this requirement to 18 units in hygiene or allied subjects. A thesis is required in all cases.

During the next few years the requirements for students majoring in hygiene were changed considerably. The major courses themselves were altered as well as the prerequisites. The class of 1915 was the first class to carry a four years' program of a hygiene major and the class of 1916 the first class to the M.A. degree in Public Health. That year the M.A. (P.H.) degree was granted for the first time. The first candidates to receive the Gr. P.H. degree in 1915 were Frank L. Kelly, Harold F. Gray, William Colby Rucker, Helen Beckwith and John Nivison Force.

It is of considerable interest to recall that the first summer session courses mentioned in connection with hygiene were given in 1908 by Assistant Professor Ward: "(1) Bacteriology of Food Products, and (2) Bacteriology of Infectious Diseases." The summer session courses for 1909 show further development: "(1) A two unit course in School Hygiene given by Dr. Ernest Bryant Hoag, Medical Director of Berkeley Schools and Lecturer in Hygiene at the University. (2) Medical Inspection in Schools by Dr. Hoag. This course planned for physicians, nurses and school inspectors. (3) A two unit course in Elements of Bacteriology by Miss Margaret Henderson and (4) Bacteriological Diagnosis by Miss Henderson" who worked in the State Hygienic Laboratory. It may not be out of place to record the romance which developed in that laboratory culminating in the marriage of Margaret Henderson to Dr. Wilbur A. Sawyer, October 14, 1911.

In May, 1910, Dr. A. R. Ward resigned as Director of the Hygienic Laboratory to accept an appointment in the Philippines. The California State Board of Health Monthly Bulletin for July 1910 states that "Dr. Wilbur A. Sawyer, a physician of experience and a member of the Medical Faculty of the University of California, has been appointed his successor." In the same issue of the Bulletin appears an article by William B. Herms of the College of Agriculture on "How to Control Mosquitoes, with special reference to anopheles." The Register of the University for 1908-09 under "Courses in other Departments" had announced that Assistant Professor Herms was offering a course in "Medical Entomology."

The 1909-10 announcement for summer session courses in 1910 mentions for the first time a "Summer Session at Los Angeles Medical Department," with a caption of "Department of Hygiene. State Medicine and Medical Jurisprudence." Dr. George H. Kress, B.S., M.D., is given as Professor of Hygiene and Dr. L. M. Powers, M.D., Lecturer on Public Health and State Medicine, and these two together with Gurney Newlin, Esq., are announced as giving summer session courses in Los Angeles on "Hygiene, State Medicine, Medical Economics and Medical Jurisprudence."

John Nivison Force, a former student of Dr. Robert T. Legge, who taught in the Medical School subjects of Pharmacology and Materia Medica Laboratory, joined the hygiene faculty in 1911 and rapidly came into prominence in the department. Publications of his soon began to appear in the literature. In the California State Board of Health Monthly Bulletin for May 1911 appears an article on "The Need for Vision in Public Health." This was the title of an

address given before the Collegiate Alumni of San Jose. The subtitles to this article are of special interest in view of Dr. Force's advancement in the field of Hygiene and Public Health. They are: (1) "The History of Preventive Medicine should be Taught." (2) "The Inherent Rights of the Child." (3) "Importance of Sanitary Factors." (4) "The Faults of Laws." His article on "Public Health in the Summer Session of the University of California" in the May 1911 issue of the Bulletin is worth abstracting as follows: "Courses in Public Hygiene and School Hygiene which were first given as a single course in the session of 1909, in the session of 1910 two lecture courses in hygiene were given while in the coming session [1911] . . . five courses in hygiene, three in medicine and 26 in physical education have been announced. The Departments of Hygiene and Medicine together offer courses of special interest to health officers, medical directors of schools and teachers of hygiene. The Department of Physical Education opened last year [1910] a model playground and commenced instruction in this comparatively modern subject." About this same time a course in First Aid to the Injured was given to Berkeley Police. Dr. Force conducted this course by illustrative demonstrations and quizzes with the assistance of Dr. Hoag and Dr. Sawyer.

Dr. Reinhardt died June 7, 1914. President Wheeler appointed Dr. Robert T. Legge in 1915 to the position of "Professor of Hygiene and University Physician," a position he retained until his retirement in 1943. Dr. Legge gave various courses in hygiene, his special interest being in industrial and school hygiene. He was largely responsible in drawing up the plans for the Cowell Memorial Hospital and in seeing it through to completion. He also developed the Students' Health Service and placed it on a firm foundation.

The September 1915 Monthly Bulletin of California State Board of Health announced that at the last meeting of the State Board: "The office of Secretary of the Board left vacant by the resignation of Dr. Donald H. Currie, was filled by the election of Dr. Wilbur A. Sawyer." Dr. Currie went back to the U. S. Public Health Service. The same Bulletin announced that J. C. Geiger, M.D., was Epidemiologist and Acting Director of the Bureau of Communicable Diseases, State Hygienic Laboratory, Berkeley; William B. Herms, M.S., Consulting Parasitologist, and Frank L. Kelly, M.D., Bacteriologist.

Plastic Surgery of the Nares

George V. Webster, M.D., *Pasadena*

THE nares appeared early in the phylogenetic development of the animal kingdom and vary from the simple olfactory pits of the primitive fishes to such highly specialized development as the trunk of an elephant. In man, the appearance and function of the nares are more important than the olfactory sense, although reflex alteration in the diameter of the nares is easily demonstrable in the presence of strong odors.

Appearance of the nares has much to do with the pleasing appearance of the face. From a sculptural standpoint, the delicate "winged buttress" construc-



a b

Figure 1.—(a) Congenital cleft-lip showing extreme deformity of left naris. (b) Reconstruction of a normal naris at time of repair of cleft-lip.



a b

Figure 2.—(a) Congenital micronares. This patient experienced difficulty in breathing. (b) Relief of stenosis of nares by the use of thick-split skin-graft.

tion of the external nares is especially important in the beauty of the normal nose. The great sculptress, Malvina Hoffman, has recorded myriads of racial, national, and tribal variations of the nares in her remarkable collection of sculpture, modeled from life in many countries throughout the world and preserved in bronze in the Field Museum of Chicago. The major continental variations such as African, Asiatic, and European types, are well recognized by the most casual observer.

Alterations in appearance of the nares occur with changes in emotion. The nares are thus essential elements in the production of facial expression. The alae are raised in laughter, dilated in heavy breathing, narrowed in distaste, and the entire tip is raised in scorn, wrinkling the skin over the nose. The nares are widely dilated with violent effort, droop with fatigue, and are elevated and widely dilated when gasping for air in exhaustion. Their calibre changes in synchrony with each respiration except during quiet breathing.

The function of the nares, in addition to those mentioned above, is the regulation of the temperature and rate and direction of flow of the stream of inspired air. In addition, a moderate screening effect is produced by the nasal hairs. The vibrissae, which play such an important tactile role in other mammalian species, are rudimentary or absent in the human.

CONGENITAL DEFORMITIES OF THE NARES

Malformations of the nares occur with relative frequency and vary from the extreme deformities associated with cleft-lip (Fig. 1) to simple familial or individual unsightliness. Plastic surgical correction is indicated to aid in establishment of the patient's social and economic equality with his normal contemporaries. The sense of inferiority, which often is associated with a poor cosmetic appearance of the nose, can be extremely disabling in sensitive individuals.

Although considerable variation in size of the nares can occur without impairment of breathing, one occasionally sees nares which are so small as to cause mouth breathing and other symptoms of an impaired airway (Figs. 2 and 3). Plastic surgical correction requires the use of a thick-split skin-graft.

The converse situation, that of nares which are too

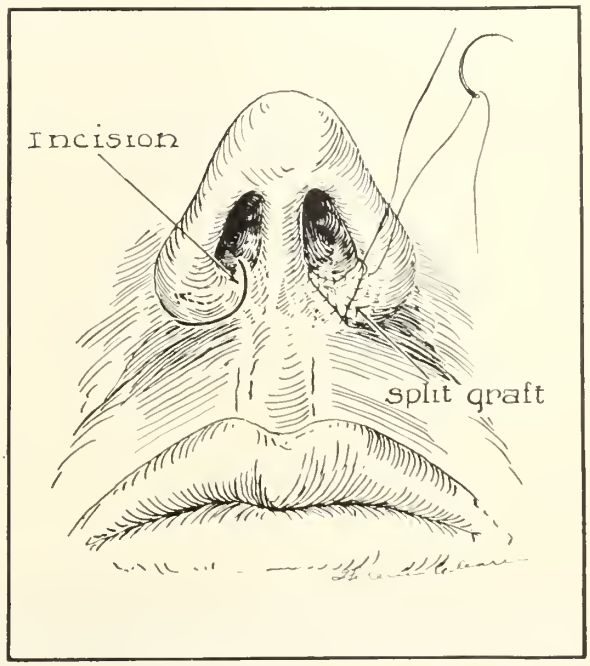


Figure 3.—Diagram showing technique for enlargement of nares.



Figure 4.—(a) Macronares. (b) Normal appearance following plastic repair.

large, is usually due to two factors. First, there may be flaring of the base of the alae. This is corrected by excision of a wedge-shaped segment (Figs. 4 and 5). Secondly, there may be resiliency of the alar cartilage which acts as a spring, constantly dilating the nostril. Resection of a segment of the alar cartilage corrects this part of the deformity. One should cut almost completely through the cartilage in an antero-



Figure 5.—Technique of reduction in size of nares.

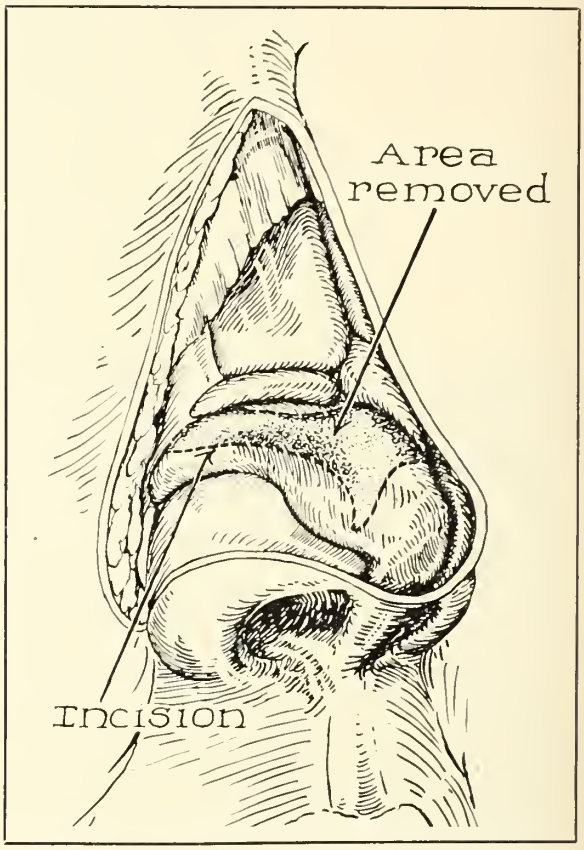


Figure 6.—Diagram of sector of alar cartilage which must be removed to give normal modeling to the nares.



a b

Figure 7.—(a) Stricture of left naris following wound near the left naso-labial angle. (b) Appearance following plastic repair using the "sickle-flap" technique of New.

posterior direction, but not completely, as a collapsing ala may result (Fig. 6).

Congenital collapsing alae are sometimes seen and are corrected by grafting elastic cartilage from the opposite ala or from the concha of the ear, obtaining and placing the graft so that the inherent curvature of the donor site is employed to maintain an open ala in the transplanted position. Atresia of the nares may accompany congenital syphilis or occur spontaneously. Plastic repair involves the use of thick-split skin-grafts, as in traumatic stricture of the nares.

One cause of difficulty in certain patients arises from the fact that the nares on one side may be reduced in size by lateral displacement of the tip of the cartilaginous septum. This is not only unsightly, but may impair breathing on the affected side. Plastic repair involves shortening the septum and moving it into place behind the columella by freeing it from its attachment to the vomer.

Negroid flaring of the nostrils in persons of Caucasian heritage is often due to thickening which occurs following repeated trauma. This is especially true when accompanied by a crushed nasal bridge. The tip is depressed and the alae are widened, forming alae closely resembling those of the normal Negro. Surgical correction of the alae should accompany plastic repair of the nasal bridge. The nares are narrowed by wedge resection of the alar floor, as in the case of nostrils which are too large. When an excessively prominent tip is being reduced in height

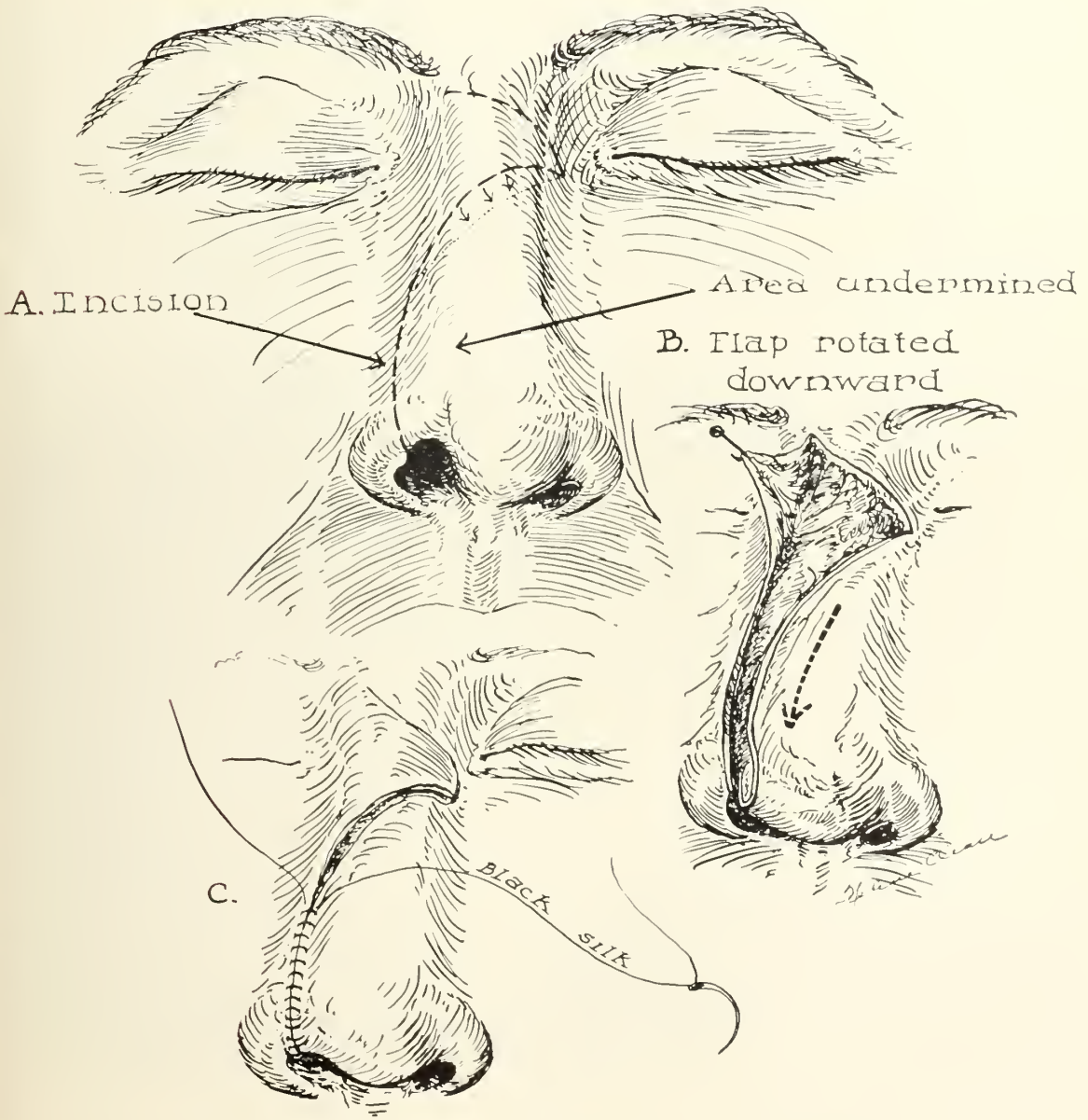


Figure 8.—Diagram showing technique for repair of small loss of ala by advancing local tissue.

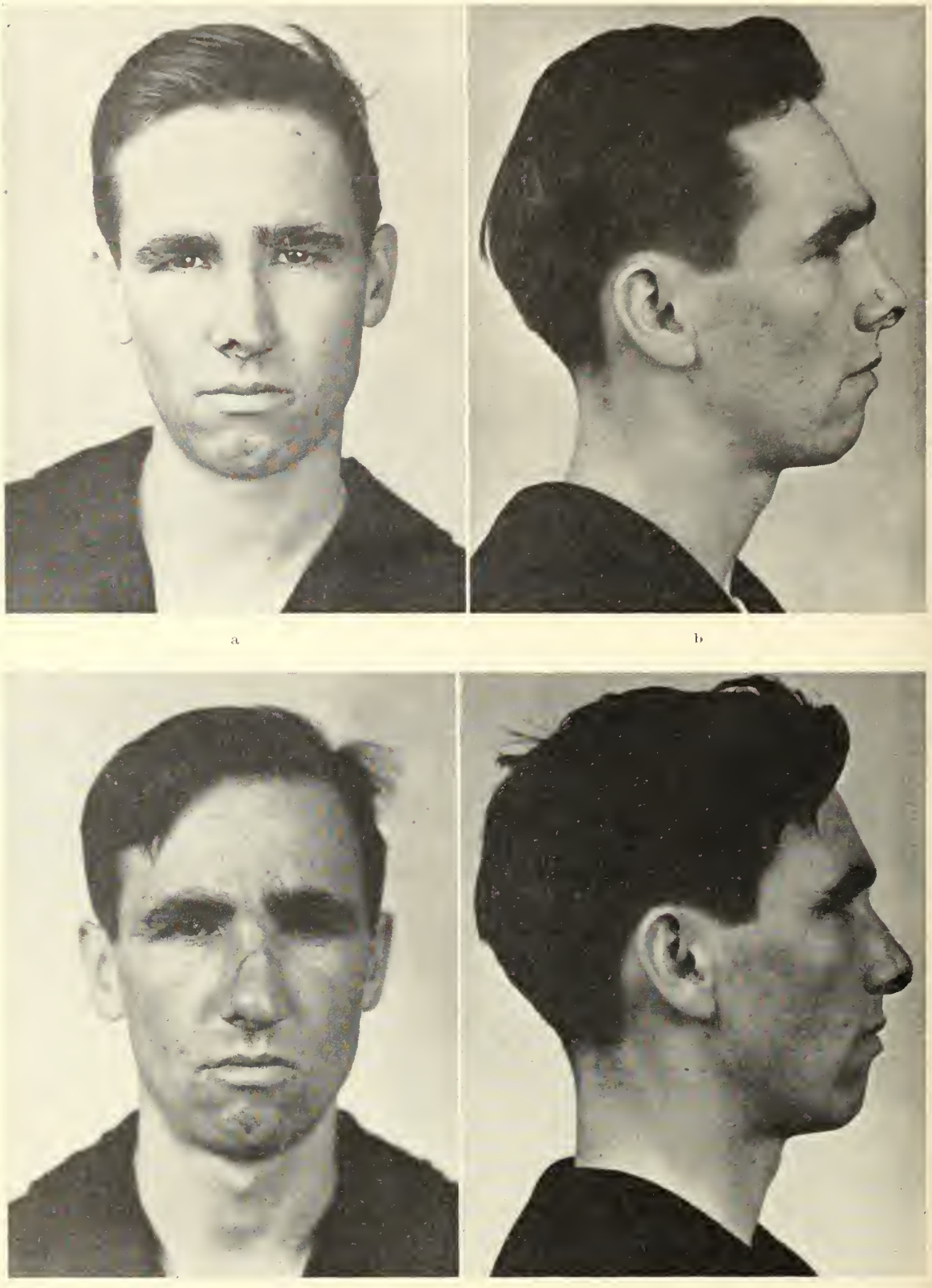
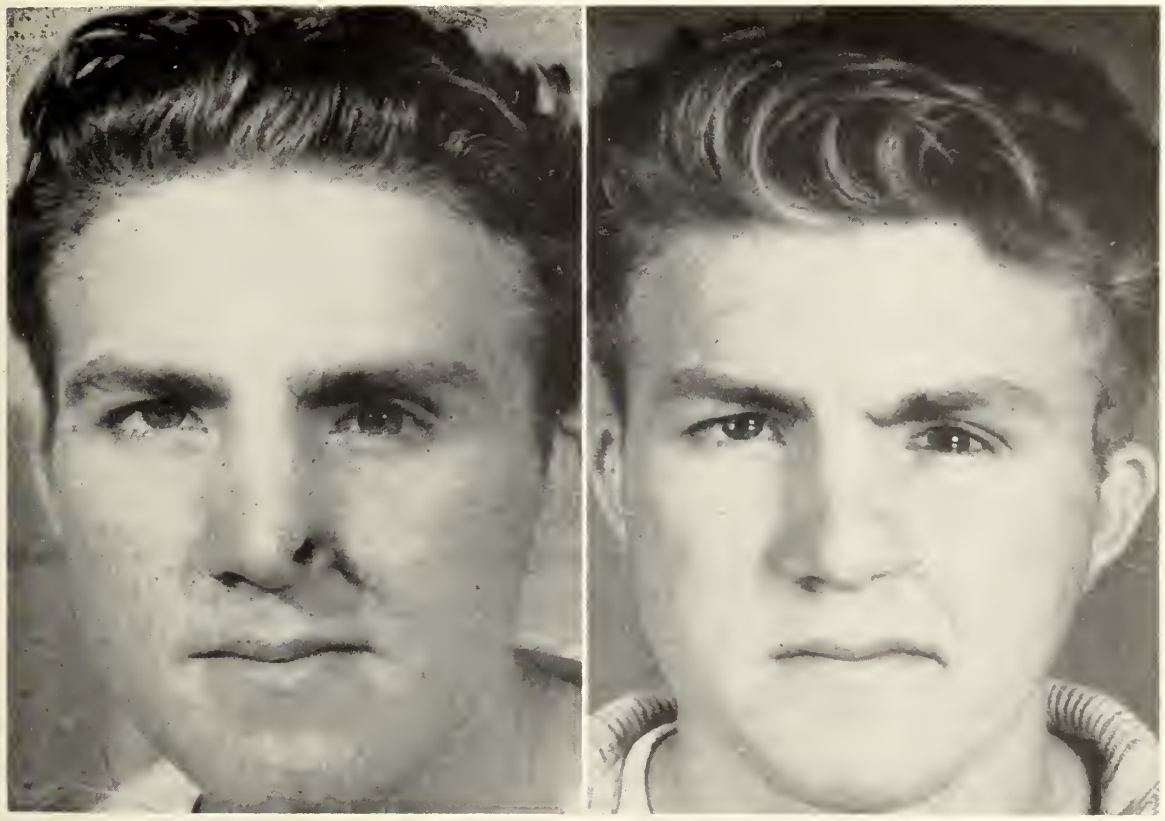


Figure 9.—(a and b) Preoperative appearance following loss of portion of alar tip on the right. (c and d) Postoperative appearance following plastic repair by advancing local tissue. (Photographs were taken immediately following suture removal to illustrate reddened lines of incision.)

during a nasal plastic operation it is often noted that a Negroid flare is produced as the tip is lowered. The alae should be reduced at the same time by the method described above.

The alae and the bulbous tip of an ugly nose can be effectively reshaped in conjunction with the removal of a nasal hump, narrowing of the bridge, or other cosmetic procedures. All too often, corrective procedures are carried out for the bridge and tip of the nose without due consideration for plastic repair



a b



c d

Figure 10.—(a and c) Traumatic loss of left ala with resulting deformity of naris. (b and d) Appearance following plastic surgical correction by the "sickle-flap" technique of New.

of the alae. If attention is given to this necessary detail, a pleasing cosmetic appearance of the nares can be obtained.

ACQUIRED DEFORMITIES OF THE NARES

Damage to the nares can occur as a result of infection, benign or malignant tumors, burns, blows, cuts, bites, and tearing injuries. There may be simple lacerations or complete avulsion. Loss of substance may greatly disfigure the nares or binding cicatrix may completely stenose the openings. Injuries to adjacent structures may also cause distortion of the nares due to late cicatricial contracture (Fig. 7).

Any laceration of the naris which cuts completely across its circumference will result in cicatricial stenosis of the naris. This is due to the fact that all scars contract along their long axis and, since the scar in such a laceration forms a ring, it can only contract by decreasing the diameter of the ring, producing stenosis. If the contracting ring is near the external opening of the naris, correction may be effected by the use of a "Z-plastic" operation. If the scarred ring is internal to the accessible area of the vestibule, a "Z-plastic" is impractical and a buried thick-split skin-graft is used to relieve the stricture.

Airway through the nares can also be obstructed by collapse of the columellar support. This may result from injury or infection or occasionally following a submucous resection of septal cartilage, which has been too extensive. The tip tends to fall downward and inward against the upper lip and the cross-sectional diameter of the naris is thus decreased. Plastic surgical correction involves the use of a cartilage graft to restore support to the tip.

The diameter and configuration of the nares can be changed by loss of substance of the alae or columella. Correction is directed toward the replacement of the tissue which has been destroyed. If only skin has been lost, a full-thickness skin replacement is indicated. If full thickness of the ala or columella has been destroyed a free graft of ear substance (containing all layers) or a pedicle-graft must be used for restoration. The use of free grafts of "skin-cartilage-skin" from the tip of the ear, or "skin-fat-skin" from the lobe, as free grafts has been recently popularized by Brown, Cannon and Dupertuis. Results, as illustrated in their cases, have been quite successful. An additional method of shifting local tissue which has been found to be useful is illustrated (Figs. 8 and 9).

Major losses of substance of an ala seriously disfigure the nares. Correction requires replacement of the missing tissue by similar tissue from a distance. Such tissue should most nearly match the color and texture of the missing part. Such flaps can be derived from the forehead, cheek, or neck. Excellent methods of replacement have been described by New (Figs. 7 and 10) and by Kazanjian. The use of a neck tube is more involved, matches the surrounding nasal tissue less well, and has a tendency for persistent redness for many months, creating a conspicuous repair of the nasal ala. In some instances, however, this method of repair is the method of choice, particularly when there are other facial defects to be corrected at the same time. The use of a cheek flap from the naso-labial fold is of value in older patients whose tissues are loose and stretch easily.

SUMMARY

The nares are important in the cosmetic appearance and function of the nose. Abnormalities of congenital or acquired types are fairly common and are correctible by plastic surgical methods.

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Periarteritis Nodosa (Panarteritis Nodosa) with Report of Four Proven Cases

Ross Paull, M.D., *La Jolla*

Jones,[5] and Baker,[1] in 1942, well reviewed and summarized the literature dealing with periarteritis nodosa and provided such splendid bibliographies that elaborate repetition now seems superfluous and extravagant if not presumptuous. Accordingly, it is intended to attempt to limit this presentation to bare essentials, and to submit a few additional references and a few ideas for consideration.

Periarteritis is, as the name implies, an inflammatory condition of the smaller arteries and arterioles in any part or parts of the human and some several animals. Whether it is entitled to the distinction of being a disease entity in itself is under dispute and study. Many believe that the disorder is a form or phase of a condition embracing a group of disorders featured by peculiar lesions of the smaller arteries and arterioles. Some of the group are: scleroderma, dermatomyositis, disseminated lupus erythematosis, Libman-Sacks "disease," and the syndromes described by Friedberg and Gross: rheumatic fever and rheumatoid arthritis have been introduced as relatives; Thompson[16] suggests that possibly Loffler's syndrome should be included in the clan.

Periarteritis nodosa was first described by Von Rokitansky,[17] and Kussmaul and Maier.[7] Seventy-one years later, Ophuls,[11] in 1923, reviewed the literature and found but 70 references to the disease. Rothstein and Welt,[14] in 1933, found 195 reported cases; Motley,[10] in 1936, found 215; Boyd,[2] in December 1938, found 395; and Wilson and Alexander[19] found about 200 authenticated cases described from early 1940 through 1943.

The tremendous increase in the number of cases of periarteritis nodosa being reported is very stimulating and somewhat disquieting, the latter not because this highly fatal disease has already become commonly recognized, but because there is accumulating evidence indicating that the disorder may be induced by the administration of various agents, some of which are in common use in all specialties and subspecialties of medico-surgical practice. The various agents which might induce a state of hypersensitiveness, and through this periarteritis nodosa, include serums, vaccines, sulfonamides, histamine, tissue extracts, and so forth. Possibly thiouracil, gold salts and other substances should be included.

It is highly probable that some part of the increase in the number of cases of periarteritis nodosa being reported is due to: (1) increased alertness of the medical profession toward the diagnosis of the condition; (2) the expanded use of old and the adoption of new diagnostic procedures; (3) the increasing percentage of autopsies without which many of the cases would be disposed of with an incorrect diagnosis; and (4) an increased interest in reporting the proven cases.

The cause or causes of periarteritis nodosa are not yet determined. Those favoring an infectious etiology have accused the spirochete of syphilis, other spirochetes, viruses, streptococci, staphylococci, and bacilli. Reimann, Price, and Herbut,[12] in 1934, reported two cases of combined trichinosis and periarteritis nodosa and suggested the possibility that the latter might have been secondary to the former. Gruber,[4] in 1925, first reported the possibility or probability of periarteritis nodosa being a hypersensitivity reaction. Rich and Gregory[13] have produced rather convincing evidence to substantiate Gruber's contention. Wilson and Alexander,[19] in 1945, offered further evidence and with their article supplied an extensive bibliography listing many articles dealing with the relationship of hypersensitiveness and periarteritis nodosa. Webb,[18] in 1944, reported a case of periarteritis in a woman with toxemia of pregnancy and puerperal sepsis. It is quite probable that more than one of these schools of thought will eventually be able to prove their contention.

The inflammatory reaction in the arteries and arterioles leads to the production of miliary aneurysms and to the extreme reduction or occlusion of the lumen, with resultant changes in the tissues thus denied their blood supply. These tissue responses, single or combined, consist in part of inflammation, edema, hemorrhage, ischemia, infarction, necrosis, ulceration, perforation, and fibrosis. Inflammatory granulomatous changes have been described by Lindsay, Aggeler and Lucia[8] and others.

Middleton and McCarter,[9] in 1935, published an article dealing with the diagnosis of periarteritis nodosa. While the disease spares no sex or age, it does seem somewhat more common in the male and in the fourth and fifth decades. About 10-15 per cent of the cases reported have been in children. The disease may be fulminating, particularly in children, or insidious, progressive or intermittent. The usual course in the fatal cases (about 95 per cent), runs a matter of four to eight months, the longest published case running 12 years.

Since the arterial involvement may be mild or severe, localized, scattered, or generalized, fulminating or chronic, the symptoms, findings, and course will, of consequence, be most protean. No tissue and so no system is immune to the ravages of the disorder. The tendency for the condition to become generalized is so prominent that multiple, if not all, systems of the body usually become involved. Its extremely protean nature in itself may be one of the most revealing features in disclosing the identity

As a colonel, M.C., A.U.S., the author was assigned to Medical Service, Letterman General Hospital, San Francisco, during the time the reported cases were observed.

of the disease. Quite uniformly the patients have lassitude, malaise, chronic fatigue, easy fatigability, fever and a leukocytosis. Beyond this the symptoms and findings depend on the distribution and magnitude of the vascular involvement. Though none of the following are essential to the diagnosis of the condition, the rather sudden and otherwise unexplained development of them, especially if in combination, should make one very suspicious of periarteritis nodosa or one of the related disorders: (1) Asthma, especially in an older person and with an eosinophilia of 15 per cent or more; (2) evidence of renal disease; (3) arterial hypertension; (4) diabetes mellitus; (5) peripheral neuritis; (6) evidence of peripheral vascular disease; (7) cardiac disorder.

Some special studies, none of which are uniformly helpful, to consider in the approach to the problem are:

1. Biopsies. (The gastrocnemius usually is a fruitful source.)

2. Repeated differential leukocyte counts.

Wilson and Alexander[19] identified asthma in 18 per cent of 300 consecutive cases of periarteritis nodosa. Of the asthmatic cases, 95 per cent showed hypereosinophilia ranging from 11 to 84 per cent. Only six per cent of the non-asthmatic cases showed hypereosinophilia.

3. Urinary sediments.

Krupp[6] has reported finding in 14 of 21 cases of periarteritis and related disorders single urine specimens presenting red blood cells, red cell casts, oval fat bodies, fatty and waxy casts and, frequently, broad casts. Here, under one coverslip, are seen the elements characteristic of all three stages of glomerular nephritis, which are usually separated by years or decades. (It was Krupp, then assigned to the laboratory service, who, on examining the urine of Case 1, first considered the case to be one of periarteritis nodosa or one of the related disorders.)

4. Sigmoidoscopy.

Felsen[3] reported finding characteristic changes in the distal gut.

This article has been prepared with the view of reporting four hitherto unreported proven cases of periarteritis nodosa, three of which were diagnosed antemortem; with the desire to remind all branches of the medical profession of the possibility that part of the somewhat alarming, rapidly progressing increase in the number of cases of periarteritis nodosa being reported may be cases induced by the administration of serums, sulfonamides, tissue extracts, or any other substance to which the body may develop a state of hypersensitivity;[4,13,19] and to introduce for consideration the possibility that the yellow fever vaccine, some of which became contaminated with an icterogenic virus, may have been directly or indirectly responsible for the development of periarteritis nodosa in the four cases being reported.

The patients in all four of the cases herein reported were vaccinated against yellow fever about February or March 1942. The patient in the first case became ill about May 10, 1942. In this case one cannot prove the existence of hepatitis prior to the onset of symptoms considered to represent the onset of his periarteritis nodosa. Mild hepatitis has not been uncommon, however, and furthermore its coexistence might be masked by or blended with the periarteritis nodosa. In the second case, hepatitis with cholemia developed in mid-May, 1942, and the symptoms of his periarteritis about June 20, 1942. In the third case, hepatitis with cholemia developed in June, 1942. The patient never became asymptomatic therefrom so that it is difficult to localize temporally the onset of the manifestations of his periarteritis nodosa. However, a persisting unfavorable change in his condition developed in November, 1942. In the fourth case hepatitis with cholemia developed following yellow fever vaccination. This fourth case was not diagnosed antemortem, and as a consequence the date of the hepatitis was not obtained for the clinical record. While some of the periarteritis nodosa lesions in this fourth case were young, some were old enough to date back to at least the summer of 1942.

All four of the cases were Army officer patients admitted to Letterman General Hospital, an Army installation. Therefore, it might justifiably be contended that these officers, to develop periarteritis nodosa at all at the time they did, would have to develop it after having been vaccinated against yellow fever, for nearly everyone in the military service in that area had been so vaccinated early in 1942. It is highly probable that all these officers had received other vaccines about the same time, such as tetanus, triple typhoid, typhus, and less likely cholera and plague. These vaccines should be kept in mind as possible occasional offenders. The fact that all four were commissioned personnel may be partly explained by the tendency of the relative youthfulness of the enlisted personnel to make them less vulnerable.

In any event, this shower of four deaths from periarteritis nodosa in a single medical installation over a period of 26 months is no less than remarkable if not significant. The registrar of this installation, which has been in constant operation since about the turn of the century, informs me that as of January 15, 1946, these four cases are all they have ever had. There were 194 autopsies at this installation in this interval of 26 months. Periarteritis nodosa was the cause of death in four (2 per cent) of these cases. Webb[18] reported periarteritis nodosa as having been found in two of 1,510 consecutive autopsies at Freedmen's Hospital, Washington, D. C., from 1930 to 1944. Jones[5] reported 14 cases being admitted to the University Hospital of the University of Michigan between October 9, 1930, and November 4, 1940. This is a concentrated group, but the report does not include figures permitting one to calculate what per cent of total admissions or autopsies were cases of periarteritis nodosa. It may confidently be assumed that the 14 cases reported from the University of Michigan Hospital had not been vaccinated against yellow fever, but it may not be assumed they did not receive serum, sulfonamides, or other agents capable of sensitizing individuals. It is agreed that

the proposition that the yellow fever vaccine may have played a role in the induction of the disorder in these four cases is open to argument as well as consideration. An analysis of the natural deaths in the military services since early 1942 as compared to one for the three preceding years might be illuminating. For various obvious reasons, medical statistics from military installations cannot be effectively compared to those from civilian institutions.

Symptomatic and supportive treatment and the appropriate treatment of the extremely protean consequences of the vascular lesions seem about all that can yet be defended with much evidence.

CASE REPORTS

Case Number 1: A 44 year old white, male Army officer was hospitalized May 31, 1942, because of unexplained and progressive headaches, feverishness, fatigue, lassitude, general malaise and a sense of heaviness and soreness all over, but especially in his four extremities at and between his joints. In addition, he complained of anorexia, loss of interest in his hitherto relished tobacco, dark urine, ankle edema, tenderness in his calves, and pain in the calves aggravated by walking.

Prior to this illness the officer enjoyed an essentially unblemished health record. He had been vaccinated against yellow fever about February or March, 1942, but reported no unusual reaction therefrom.

The physical examination on hospitalization revealed moderate fever, tachycardia of 120 per minute, a slate colored skin, slight tenderness of the muscles of the thighs, moderate to marked tenderness of the muscles of the legs, and moderate pitting ankle edema.

Laboratory Findings: Urinalyses on admission revealed only mild proteinuria and 15 to 20 hyaline casts per H.P.F. Soon thereafter, red blood corpuscles appeared in abnormal numbers. Somewhat later, but before June 15, 1942, the urine sediments carried abnormal numbers of R.B.C. and W.B.C., fine hyaline, granular, cellular and R.B.C. casts, many R.B.C. and W.B.C. tubular casts and a few broad casts.

The blood Kahn was normal and the blood sedimentation rate on admission was normal; it was not repeated. The blood urea nitrogen gradually rose from an admission level of 10 mgm. per cent to 27 mgm. per cent by June 26; it had returned to about 15 mgm. per cent by July 31. Plasma proteins on two occasions in June were about 4.5 grams per 100 cc.; the A:G ratio was on each occasion 0.56. Intravenous phenolsulfonthalein, June 6, yielded 45 per cent in one hour and 60 per cent in two hours.

Thick smears of blood for malaria were normal and prostatic smears yielded only many gram positive cocci, while agglutinations for typhoid, paratyphoid A and B, undulant fever, and Proteus X-19 were normal. Blood cultures were sterile. The prothrombin time on June 27 was 25 seconds.

The E.C.G. on June 1 revealed only sinus tachycardia of 106, and x-ray films of bones, joints, lungs, heart and abdomen revealed no disease. The R.B.C. ranged between 3.3 and 4.4 million; the hemoglobin between 70 and 90 per cent; the W.B.C. 10 to 23 thousand and the eosinophils between 1 and 9 per cent.

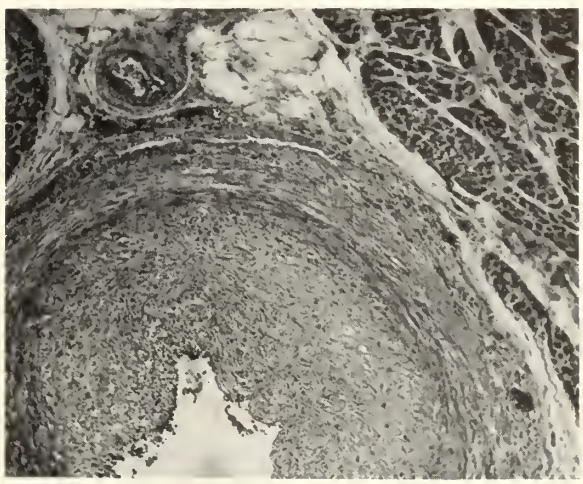
Biopsy of a section of gastrocnemius muscle, right median belly, taken two weeks after the patient was hospitalized, revealed microscopically typical pathology of periarteritis nodosa.

During the first week of hospitalization, the patient had a normal morning but high afternoon temperature, developed chills, episodes of profuse diaphoresis, and severe pains in both legs. These, with the admission symptoms, persisted until about mid-June, by which time he had developed, in addition, a paralysis of the dorsiflexors of both feet, and a constant fever. Characteristic urinary sediments were identified and reported by Krupp,[6] then assigned to the Laboratory Service, prior to the confirming biopsy from the gastrocnemius muscle June 15, 1942.

During the last two weeks of June, the patient was much relieved of all symptoms except the paralysis of the dorsiflexors of both feet. Thereafter, his course was a series of relapses and remissions of all symptoms except the paralysis, which was permanent. Early in July, atrophy, which proved to be progressive and became extreme, was noted in the musculature of all four extremities. About July 20, severe pains developed in both forearms. On August 15, he was delirious and combative. Such episodes became progressively more frequent and severe until his demise September 11, 1942. Treatment in this and the three cases to follow was symptomatic and supportive: low residue diet, anodynes, sedatives, transfusions, and so forth.

Clinical Diagnosis: Periarteritis Nodosa.

Anatomic Diagnoses: 1. Periarteritis Nodosa, generalized, severe; 2. Infarction, small intestine, multiple, severe, secondary to "1"; 3. Perforation, small intestine, complete, secondary to "1" and "2"; 4. Peritonitis, adhesive, chronic, extensive, severe, secondary to "1", "2" and "3".



Case No. 1.—Coronary arteries showing degenerative changes of media, marked intimal thickening and proliferation, and infiltration of polymorphonuclears, lymphocytes, and occasional eosinophils throughout all layers.

Case Number 2: A 54 year old white, male Army officer was hospitalized July 1, 1942, because of fever, anorexia, malaise, episodes of profuse diaphoresis, polyuria, dark urine, grayish stools, aching pains in both legs aggravated by walking or prolonged standing, and a small blotchy erythematous rash which started on his legs and gradually spread to his arms and back.

Except for arterial hypertension of some 15 years' standing and "swollen ankles" toward evening for an indefinite but extended period ending some several weeks before his current illness, and a period of anorexia, nausea, heaviness in the region of the liver, and jaundice in May, 1942, the patient had enjoyed good health. With the exception of the jaundice, the symptoms which developed in May, 1942, persisted to or fused with the present illness. He had been vaccinated against yellow fever in February, 1942.

The admission physical examination revealed: A Raynaud-like syndrome in all manual digits, prominent mottling of

the skin of both legs, a mild tachycardia, fever of 100° F., blood pressure of 175/95, the left lobe of the prostate to be slightly enlarged, mild bilateral deafness, an arcus senilis, bilateral mild pitting edema of the ankles, and bilateral moderate tenderness of the calves.

As Case No. 1 with a very similar story and picture had been admitted to the same ward only a month earlier, it was very natural that periarteritis nodosa immediately was seriously considered and prominently listed in the working diagnosis.

Multiple urine studies revealed little or no protein; and inconstantly a few small R.B.C., hyaline, cellular, granular and waxy casts, but no broad casts. Blood Kahn was negative. The blood urea nitrogen values were within normal limits, while the serum proteins measured 5.2 grams for each 100 cc. (Albumin/globulin ratio 1:1.) A prostatic smear contained pus cells but no bacteria. Serum agglutinated E. typhi up to 1:1280 on July 4, 1942, and again on July 6, 1942. Blood and urine cultures were negative for all growths, and feces cultures were negative for typhoid group and no parasites or ova were found.

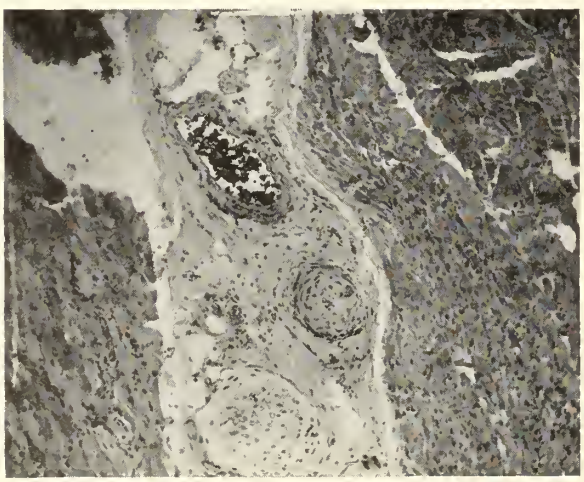
The icterus index varied from 11 to 34 units.

An electrocardiogram revealed sinus tachycardia and left axis deviation.

Biopsy of the right gastrocnemius muscle revealed diagnosis compatible with periarteritis nodosa.

Blood:	R.B.C.	W.B.C.	Hb.	Eosinophiles
7- 2-42	4.25	10400	90	Ranged from 1 to 4%
7-14-42	4.15	32000	90	
8- 1-42	3.67	21600	75	

During the first two weeks of hospitalization, the patient's condition was unchanged. Then the fingertips changed color from pallor to syanosis, the right foot became anesthetic, paresis of the dorsiflexors of the left hand and wrist developed, and the urine sediments began to resemble those so suggestive of periarteritis nodosa. On July 19 the patient wakened with a total paralysis of the extensors of the right wrist; on July 31 the paresis of the left wrist became a paralysis. On August 4 a biopsy from the gastrocnemius muscle confirmed the diagnosis. During August dry gangrene of the second left toe, both thumbs, and right middle finger developed, and there was extreme muscular atrophy of all four extremities. The patient rapidly failed and expired September 16, 1942.



Case No. 2.—Muscle biopsy showing fibrosis of arterial wall with almost complete occlusion, and residual perivascular infiltrate of lymphocytes, polymorphonuclears, and occasional eosinophils. Note degenerative changes in skeletal muscle with altered staining reaction and marked sarcolemmal proliferation.

Clinical Diagnosis: 1. Periarteritis Nodosa.

Anatomic Diagnoses: 1. Periarteritis Nodosa, generalized, severe; 2. Infarction, myocardial, multiple, extensive, recent and old, secondary to "1"; 3. Perforation, small bowel and gall bladder, secondary to "1"; 4. Peritonitis, suppurative, acute, severe, secondary to "1" and "3"; 5. Infarction, with necrosis, pancreas, severe, secondary to "1".

Case Number 3: A 53 year old white, male medical officer was hospitalized March 2, 1943. The history of previous illnesses was noncontributory. In March, 1942, the patient was vaccinated against yellow fever. In June, 1942, at approximately the same time that others vaccinated with him developed hepatitis with cholemia, he developed anorexia, nausea, belching, gaseous abdominal distention, but, he thought, no jaundice. He was very tired. While indigestion disappeared after several weeks, the chronic fatigue and easy fatigability seemed progressive. About late November, 1942, pain in the calves developed, and this was aggravated by walking or prolonged standing. Through the course of the next three months these pains became more severe and gradually were accompanied by the same symptom in the thighs, back, shoulders, neck and arms. These pains seemed worse in the afternoon and evening. During the same three months prior to admission, chilly sensations and profuse night sweats gradually developed. In spite of all these symptoms, the patient had remained on duty until two weeks prior to admission, when he accepted sick-in-quarters status.

Physical examination upon admission revealed blood pressure of 115/75, a pulse rate of 88, a slight fever, slight tenderness at the left costovertebral angle and tenderness of both calves. A series of blood studies (R.B.C., W.B.C., Hb., and differential) showed normalcy except for a leukocytosis ranging between 10,000 and 20,000. Cultures of urine, blood and stools were normal, as were agglutinations for all the usual disease considered in chronic febrile disorders (except for typhoid and paratyphoid, in which cases the result was that to be expected in vaccinated military personnel). An electrocardiogram also was normal.

A series of urinalyses showed inconstant proteinuria without a significant number of R.B.C., W.B.C., or casts. Erythrocyte sedimentation rate was constantly rapid. X-ray films of the chest and heart, gastrointestinal tract, gall bladder and soft tissue of the legs all were normal, as were the pyelogram and a barium enema study. The blood Kahn also was normal. A biopsy specimen from the gastrocnemius showed periarteritis nodosa.

At about the time of hospitalization, the patient developed gaseous abdominal distention which thereafter was only partially relieved by enemas and prostigmine. All other symptoms became progressively worse until he died. Late in March he developed neuritic pains in all four extremities. Had the ward officer had the advantage of having seen Cases 1 and 2, he ought by then have grown very suspicious that he was dealing with another case of periarteritis nodosa. When the neuritic pains developed, Clarence Godard, Lt. Col., M. C., A. U. S., Chief of the Neuropsychiatric Service, was called in consultation. It was his opinion April 4, confirmed by biopsy the following day, that the patient had severe, multiple peripheral neuritis, probably secondary to periarteritis nodosa. About April 17 both feet became paralyzed and the right hand and wrist paretic.

At his own request and that of a physician friend, the patient received two courses of sulfadiazine, neither of which seemed to have favorable or unfavorable influence.

He progressively failed and on June 9 was unconscious, incontinent, pallid, and diaphoretic with shallow, slow, stertorous respiration, a weak, thready pulse, and a blood pressure of 60/40. He died that day.

Clinical Diagnosis: Periarteritis Nodosa.



CASE No. 3.—Testis showing organization and recanalization of thrombus in medium sized artery, with infiltration of all coats by polymorphonuclears, lymphocytes, and occasional eosinophils; the interstitial tissue is scarred and the tubules degenerated. In areas this testis showed acute infarction.

Anatomic Diagnoses: 1. Periarteritis Nodosa, generalized, severe; 2. Hemorrhage, multiple, of brain and pons, secondary to "1"; 3. Infarction, myocardial, acute, secondary to "1".

CASE NUMBER 4: A 64 year old white, male officer was hospitalized October 24, 1944, because of a recurrence or partial persistence of frequency, nocturia, and dysuria dating from about 1930. A transurethral prostatic resection had been done in December, 1943, and this had resulted in comfort which continued until late July, 1944.

About 1940 the patient had noticed an increase in ease of fatigability and mild pain in his left chest unrelated to exertion. An electrocardiogram taken at that time and another in June, 1942, he believed, were reported as being slightly abnormal. In June of 1943 he developed increased fatigability, lassitude, and dyspnea on slight exertion. The exertion also caused a pain in his left chest which sometimes radiated to his left upper arm. This was a sensation of fullness or pressure with an occasional sharp quality. The pains usually lasted from a few seconds to a minute and were relieved by rest. He had been vaccinated against yellow fever in February or March of 1942 and had developed hepatitis with cholemia a matter of two to four months thereafter.

Upon physical examination admission revealed blood pressure of 175/105, bilateral absence of dorsalis pedis pulsation, and uniformly smooth third degree enlargement of the prostate. The author saw this patient in consultation October 31, 1944, and was unable to get a history of any symptoms, except those referable to the urinary tract, prior to December of 1943 when the circulatory symptoms developed. However, an electrocardiogram dated June, 1943, was available, a fact which suggested there might have been symptoms then which had been the reason for taking the electrocardiogram. This record and one taken in December, 1943 revealed changes suggesting coronary insufficiency. The author found nothing additional in the way of physical changes.

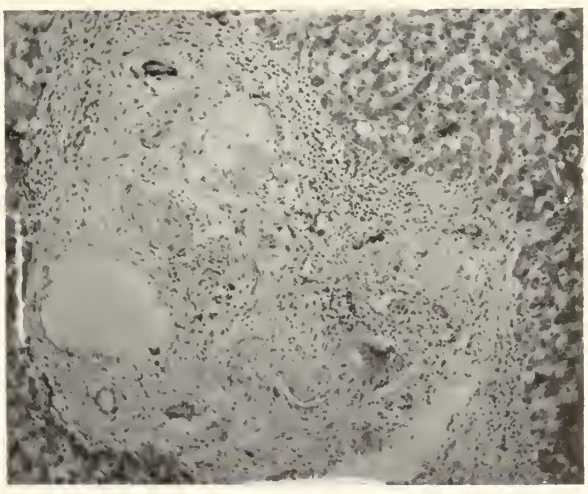
Recent, current studies, including an x-ray film of the heart and lungs, routine complete blood count and hemoglobin estimation, complete urinalysis, blood sugar, blood urea nitrogen, blood cholesterol, blood chloride, and electrocardiogram, showed no abnormality. In the light of these findings, the author gave the opinion that, should clotting, bleeding, and prothrombin times be normal (and they proved to be normal), the patient was a reasonably good surgical risk for a transurethral resection under sacral block anesthesia. In view of his circulatory history and transient electrocardiogram changes, it was recommended preoperative atropin and barbiturates be administered and that a plentiful supply of compatible blood be immediately available.

With these precautions, the transurethral resection was performed November 2, 1944. While it was anticipated that the patient would be in the operating room for an hour or less, severe hemorrhage from the operative site kept him there a matter of four hours. Attempts during that time to control the hemorrhage were of doubtful success. The patient was returned to the ward with a Breeke bag held in place by two pounds of traction, and 1000 cc. of fresh whole blood was transfused almost immediately. At 3 o'clock that afternoon the patient perspired profusely, had tachycardia of 120 per minute, blood pressure of 215/105, and had developed a pulsus alternans. Atropin was continued and papaverine, aminophylline, and oxygen therapy were initiated. At 11:30 that night the pulsus alternans had disappeared but frequent premature ventricular systoles had developed. Through the following two days, November 3 and 4, the general condition seemed much improved and the blood pressure and pulse had returned to the patient's usual. At 6 a.m., November 5, he suddenly lost consciousness and became apneic and cyanotic. Caffeine and artificial respiration were administered. Upon recovering consciousness, the patient insisted no pain had preceded the episode. Another such episode developed at 5 p.m. the same day, again with prompt recovery. The blood pressure at the time was 150/90. Half a hour later, death came in such an episode.

An electrocardiogram taken immediately after the 6 a.m. episode revealed frequent runs of ventricular tachycardia, frequent premature ventricular systoles, a flat T-1, low T-2, and deeply inverted T-4. Myocardial infarction and pulmonary embolus were considered complicating possibilities.

Clinical Diagnoses: 1. Prostate, hyperthrophy of, benign, chronic, severe, cause undetermined; 2. Arteriosclerosis, generalized, severe; 3. Infarction, myocardial, acute, secondary to postoperative hemorrhage and "2".

Anatomic Diagnoses: 1. Periarteritis Nodosa, generalized, severe. (Lesions of all stages or ages present); 2. Hemorrhage, postoperative, severe, secondary to "1"; 3. Cardiac arrythmias, various, and probably terminal ventricular fibrillation; 4. Arteriosclerosis, generalized, mild.



CASE No. 4.—Liver. Fibrotic portal area showing small hepatic artery with eosinophilic degeneration of wall, and almost complete fibrotic obliteration of lumen of two other arteries.

COMMENT

Complete gross and microscopic autopsies were performed on all four cases. To list all the anatomic changes would serve too little purpose to justify the consumption of the space required. Some of the laboratory reports are omitted as well and for the same reason.

The patients in all four of these cases had been vaccinated against yellow fever in February or March, 1942; three of them definitely, and the fourth probably, developed hepatitis about two to four months thereafter.

The patient in Case Number 4 is known to have received sulfathiazole as a urinary antiseptic about December, 1943, and in view of his longstanding urinary tract problem and the fact he was a physician, it is rather probable that he received sulfonamides at other times. In Case Number 3 the patient received sulfadiazine, not before, but during his terminal illness, under circumstances explained in the case report.

It is of interest that Krupp[6] was the first to suspect periarteritis nodosa in Case Number 1, as a result of the study of urinary sediments. During the course of hospitalization, but after the diagnosis had been made, the patient in Case Number 2 likewise produced characteristic urinary sediments.

Case Number 4, the only one in which the patient's disease was undiagnosed antemortem, presents features worth comment:

1. Surgeons unfortunate enough to enter a case of periarteritis nodosa face the prospect of dealing with intractable hemorrhage and operative wounds very resistant to healing. The protean manifestations of this disorder paint many pictures very alluring to surgical intervention.

2. If this case is not an example of it, it at least should remind physicians and surgeons of the undependability of blood pressure and pulse readings as indications of the presence or degree of hemorrhage. These may change only when shock is advanced, if not irreversible.

3. In view of the history, the various postoperative cardiac arrythmias and electrocardiogram changes, careful postmortem search was made for coronary disease and myocardial infarction. Only focal, chronic, interstitial, and perivascular myocardial fibrosis was found. Scherf and Klotz,[15] in 1944, reported QRS, ST, or T changes in electrocardiograms of 14 of 15 cases of gastric hemorrhage. The changes seemed, in most cases, unaccompanied by evidence of shock or severe anemia. The electrocardiogram changes returned to normal in two to ten days.

SUMMARY

1. Four hitherto unreported, fatal proven cases of periarteritis are reported.

2. The patients in all four cases were Army officers who had been vaccinated against yellow fever in February or March, 1942. Three of these officers are known to have developed postvaccinal hepatitis: the fourth is believed to have developed it.

3. All four patients died at a single medical installation over a period of 26 months between September, 1942, and November, 1944, their deaths composing two per cent of the total deaths for that period.

4. The medico-surgical profession is reminded that the rapid acceleration of the rate and number of cases of periarteritis nodosa reported may be due, in part, to the induction of cases by the administration of various substances including sulfonamides, serums, tissue extracts and vaccines including yellow fever vaccine.

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MEDICAL PROGRESS:

Rheumatoid Arthritis: A Review of Recent Literature

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MUCH clinical and laboratory investigation continues in an attempt to solve some of the mysteries of rheumatoid arthritis, the great crippler among the rheumatic diseases. So voluminous is the literature of the past few years that only some of the more important contributions can be summarized herein. The subject of rheumatoid spondylitis is not included in the present review as it was discussed in a recent issue of this journal.[7]

RELATIVE INCIDENCE

Cases of rheumatoid arthritis make up approximately one-third of admissions to most large arthritis clinics. At the Mayo Clinic 35 per cent of about 4,500 "rheumatic cases" seen annually have this disease.[62] The same relative incidence prevailed also at the United States Army's two special centers* for chronic rheumatic diseases.[59] At an Army General Hospital located on the West Coast, peripheral rheumatoid arthritis constituted 12.4 per cent of 450 consecutive admissions for arthritis and allied conditions (peripheral and spinal types combined constituted approximately 20 per cent.[2]) The relative incidence in British military hospitals was less: rheumatoid arthritis was diagnosed in only 1.85 per cent of 270 soldiers admitted for rheumatic diseases at one general hospital[92] (incidence for peripheral and spinal types combined was 7 per cent), and at another it accounted for only 6 per cent of museuloskeletal disabilities.[27] The disease was a major cause for evacuation of American soldiers from North Africa; such cases outnumbered rheumatic fever, rheumatic heart disease and pulmonary tuberculosis as nonneuropsychiatric causes, and were exceeded only by cases of asthma, peptic ulcer and nonulcer dyspepsia.[95]

CLINICAL DATA

Initial involvement of finger joints was more common in females (38 per cent) than in males (26 per cent) in a civilian series studied by Sclater.[93] Among soldiers, initial involvement occurred in the lower extremity joints in 70 per cent of cases;[3] the metatarsophalangeal and interphalangeal joints of the feet were involved in 41 per cent of cases, while corresponding joints of the fingers were affected in only 10 per cent. Such figures suggest that joint trauma plays a role in initial localization.

So-called "atypical" cases of rheumatoid arthritis occur so frequently that it may rightly be questioned whether the clinical pattern of "insidious onset, slow progressive course and asymmetrical joint involvement" should be labeled as usual or typical. Examples of atypical onsets and atypical early clinical courses, as observed by Ropes and Bauer,[89] included: (1) asymmetrical involvement, often a monarthritis, (2) sudden febrile onsets precipitated by acute infection and accompanied by skin rash and migratory joint involvement, (3) bouts of arthritis precipitated by respiratory or other infections and not followed by permanent articular residues, (4) febrile onsets resembling rheumatic fever, (5) transient swellings affecting one joint and then another, resembling the "palindromic syndrome," (6) onsets consisting of recurrent joint and muscle aching and stiffness with qualitative characteristics of so-called "primary fibrositis." Most patients with "chronic synovitis" and "intermittent hydroarthrosis" eventually turn out to have rheumatoid arthritis.[50]

Effect of Hepatitis:

Patients with rheumatoid arthritis who develop hepatitis or biliary obstruction of a degree sufficient to produce icterus usually experience either a partial or complete temporary remission of the disease. Subsidence of objective manifestations as well as subjective symptoms may be striking. Attempts made to imitate this phenomenon experimentally by injecting bile salts and bilirubin intravenously have failed. However, Gardner, Stewart and MacCallum[48] produced hepatitis experimentally by inoculating patients with icterogenic serum from patients with infective hepatitis and were able to study the phenomenon. Of 312 rheumatoid arthritis patients inoculated 32 developed jaundice. With the appearance of jaundice dramatic improvement was noted in 18 of the 32 patients (complete remission in ten, considerable improvement in eight); disappearance of pain and swelling was quickly followed by increase in range of motion. The production of hepatitis experimentally provides a means of evoking a remission under controlled conditions and an opportunity of analyzing the mechanism by which it is produced. How hepatic damage produces its curious ameliorative effect remains unknown.

Effect of Pregnancy:

Many females with rheumatoid arthritis experience relief during pregnancy; partial or complete remissions may occur, usually beginning at the end of the first trimester and persisting for varying periods after delivery. The mechanism in pregnancy, as in hepatitis, remains a mystery. Elevation of serum lipids, total cholesterol and phospholipids is common to both pregnancy and jaundice, but these fractions are not deficient in rheumatoid arthritis.[14,17]

* Army and Navy General Hospital, Hot Springs, Arkansas, and Ashburn General Hospital, McKinney, Texas.

Cardiac Findings:

Rheumatic carditis is a frequent autopsy finding in patients with rheumatoid arthritis but clinical or electrocardiographic evidence of cardiac involvement is not common.[91] This disparity suggested to Hench[62] that the pathologic lesions may be of such a type and degree as to be subclinical and not detectable before death. The occurrence of cardiac lesions at autopsy typical of rheumatic heart disease and the not infrequently observed clinical transition of apparent rheumatic fever into chronic rheumatoid arthritis have convinced some observers that the two diseases are closely related, if not the same disease with different predominant manifestations. Collins[24] suggested that rheumatoid arthritis may be a "lente" form of rheumatic fever, and Young and Schwedel[116] believed that there was no fundamental purpose in separating the two diseases. However, Hench[62] thought that the two diseases must be carefully distinguished and maintained that the finding of rheumatic heart lesions in patients with rheumatoid arthritis probably represented "the presence of two coincidental diseases."

PATHOLOGIC DATA

Rheumatoid arthritis is not solely a disease of the joints but a systemic disease characterized pathologically by widespread changes in various tissues and organs. Recent necropsy and biopsy studies emphasized those changes which occur in the heart, peripheral nerves and skeletal muscles.

Joints:

The pathologic changes were described by Kelikian[67] as follows: Rheumatoid arthritis is an inflammatory reaction of the comparatively undifferentiated connective tissues. The relative vascularity of the synovial membrane and bone marrow favors the localization of circulating irritants, and in response to the offending agent there ensue hyperemia, edema, cellular infiltration, exudate and tissue proliferation. The synovial membrane becomes soggy, thickens (synovitis); from its loose areolar spaces tissue fluids seep into the joint cavity (hydrarthrosis). Later, finger-like processes of proliferated tissue project into the joint cavity (chronic villous synovitis). Granulations formed in the external layer of the synovial membrane may extend into the surrounding structures and cause them to contract (periarthritic adhesions, contractures) or, more commonly, they may break through the barrier of the internal layer of the synovial membrane, creep over the articular cartilage (pannus), erode, and destroy it. Usually proliferative activity is going on in the marrow at the same time and the trabeculae of bone are thinned (atrophy). The cartilage is attacked and when the opposing cartilages are completely eaten away, the granulations contract to form adhesions (fibrous ankylosis); ultimately these connecting strands may ossify (bony ankylosis). Rheumatoid arthritis does not always run through this entire gamut of joint inflammation; it may proceed up to one or another phase and then arrest itself. If a mechanical incongruity is created (eroded articular surfaces, over-distention, contractures, subluxation) the joint may in time break down architecturally. Joints with extensive synovial membrane and bulbous articular ends which contain a greater amount of marrow tissue are more likely to be affected by rheumatoid arthritis; thus rheumatoid arthritis predilects the knees, the elbows, the metacarpophalangeal and proximal interphalangeal joints.

Peripheral Nerves:

Widespread involvement of the peripheral nervous system in patients with rheumatoid arthritis was described by Freund, Steiner, Leichtentritt and Price.[43,44] Lesions consisting of perineural nodules (nodular perineuritis) were found irregularly distributed, not only in the nerves of the extremities but also in peripheral nerves without joint distribution. Histologically the nodules consisted of an outer zone of lymphocytes with scattered plasma cells and an inner zone of polyhedral shaped cells having large irregular nuclei. Neuritic pains, paresthesias and trophic changes, common to the disease, might be attributed to such lesions.

Muscles:

Steiner, Freund, Leichtentritt and Price[42] described also a nodular polymyositis consisting of compact accumulations of lymphocytes, a few plasma cells and occasional epithelioid and eosinophilic cells in specimens from 15 cases of rheumatoid arthritis. The disseminated nodules were found in biopsies taken at random (gastrocnemius, deltoid, pectoral, rectus abdominis, iliopsoas muscles, etc.). They were discovered in every case, and were considered as specific lesions. In 196 control cases no such lesions were found. Such a widespread myositis (together with coexisting nodular peripheral neuritis) offers an anatomic-pathologic basis for the muscle atrophy of rheumatoid arthritis which heretofore could not be explained on the basis of disuse alone.

Heart:

In a total of 152 recently reported necropsies on patients with rheumatoid arthritis, 59 (39 per cent) had cardiac lesions indistinguishable from those of rheumatic fever. Baggenstoss and Rosenberg[10] demonstrated lesions typical of rheumatic heart disease in 16 (53 per cent) of 30 patients. Gross changes were present in the mitral valve in ten, in the aortic valve in six, in the tricuspid valve in two, and in the pericardium in six. Although pathologically identical, the lesions were considered less severe and less widespread than in rheumatic fever.[11] This frequent association of rheumatic heart disease and rheumatoid arthritis was verified by the necropsy findings of Fingerman and Andrus[37] (19 of 61 cases), of Bayles[15] (6 of 23 cases), and of Young and Schwedel[116] (24 of 38 cases).

LABORATORY DATA

Blood Counts:

Approximately three-fourths of patients with rheumatoid arthritis have hemoglobin values below 80 per cent, according to Haden.[54] Robinson[86] believes

that the anemia is partially due to simple plasma dilution (hydremia effect caused by a rise in plasma proteins) similar to that which occurs in pregnancy. The leukocyte picture is not characteristic; a mild leukopenia is frequent but occasionally a mild polymorphonuclear leukocytosis occurs. The differential count is rarely altered.

Erythrocyte Sedimentation Rate:

This test is generally accepted by most clinicians as a most useful index of disease activity. But 50 per cent of Short's [95] early or mild cases had normal rates, and Steinberg and Lowenstein [108] observed patients with hot swollen joints whose rates were normal and patients with clinically inactive disease whose rates were increased. Some investigators believe that a careful clinical evaluation is more dependable than the sedimentation rate both in diagnosis and in following the course of the disease.

Roentgenographic Findings:

Roentgenographic abnormalities (aside from periarticular soft tissue swelling) result from destruction of articular cartilage and from alterations in subchondral bone. When the pathologic process is restricted to the synovial membrane, roentgenograms are negative. It may take months or years for the development of sufficient cartilaginous or osseous change to be recorded on roentgenograms; though pathologically involved, some joints may never show positive x-ray findings. These considerations explain the time interval which exists between the development of localizing physical signs and the appearance of roentgenographic changes.[6] Only 25 per cent of Short's [95] patients, observed in an overseas general hospital, demonstrated x-ray changes, and these usually were confined to varying degrees of bone atrophy. A common mistake is to rule out rheumatoid arthritis on the basis of negative roentgenograms. Further, the roentgen alterations are not specific for rheumatoid arthritis, as many different forms of arthritis may exhibit the same basic alterations. Camp [20] recognized the roentgenologist's limitations in attempting to differentiate between the various types of arthritis: "The pathologic and x-ray response of joints in various diseases is too similar to permit dogmatic interpretation of the roentgenogram."

Miscellaneous Tests:

The Weltman reaction, a test based on the coagulation of serum proteins in the presence of an electrolyte ($CaCl_2$), was considered a sensitive indicator of activity in rheumatoid arthritis by Milles and Salt.[77] But others believed that the test did not reflect the severity of the clinical picture, and Kling [70] considered the erythrocyte sedimentation rate to be a more accurate guide. The Metzer test was considered valueless.[53]

Biochemical tests on the cerebrospinal fluid were made by Ludwig, Short and Bauer [75] on 101 patients with rheumatoid arthritis. The only significant abnormalities noted were increased concentrations of protein; concentrations of protein were increased (46 to 70 mgm.) in 6.8 per cent of 50 patients with only peripheral joint involvement, 47 to 105 mgm. in 28.6 per cent of 42 patients with rheumatoid spondylitis, and in 15.8 per cent of the total 101 patients.

ETIOLOGY AND PATHOGENESIS

Despite continued research the cause of rheumatoid arthritis remains unknown. All of the currently considered etiologic theories—infectious, metabolic, endocrine, circulatory, psychogenic—lack proof.

Infectious Factor:

Although many clinical features and some immunological findings suggest that infections play a role in the pathogenesis of rheumatoid arthritis, carefully conducted cultivations of the blood and joint fluid have failed to prove that the disease is an infectious process. Fraser [26] cultured the blood of 61 patients with rheumatoid arthritis in beef-heart infusion broth. No organisms of any kind were recovered in 58, and in the remaining three diphtheroid bacilli were isolated; streptococci were never recovered. In 61 controls, five positive cultures were obtained, streptococcus viridans in three and diphtheroid bacillus in two. Angevine, Rothbard and Cecil [1] could find no significant organisms in culturing blood, joint fluid, synovia or subcutaneous nodules.

Patients with rheumatoid arthritis had agglutination titers of 1:160 or higher for hemolytic streptococci more often (58 per cent) than did normal controls (14 per cent) or patients with osteoarthritis (28 per cent).[35] Titers for serum antistreptolysins in rheumatoid arthritis were not found to be characteristic, whereas, in rheumatic fever they were usually elevated. Davidson [29] pointed out that positive agglutinins, antistreptolysins, and skin tests with streptococcic antigens mean only that the patient has been infected with streptococci, not that the arthritis is due to this organism.

Circulatory Factor:

According to Naide and Comroe [78] the peripheral vascular responses of patients with rheumatoid arthritis follow a characteristic pattern: the basal vascular tone was found to be high and the peripheral vessels to be easily constricted. This perhaps accounts for the thin atrophic skin with cold clammy hands and feet, cutaneous pigmentation, causalgia, hypcresthesia, symptomatic improvement with vasodilating procedures, and perhaps for flare-ups of the disease after emotional upsets or exposure to cold. Rheumatoid arthritis victims were found to be a vasospastic group before the disease actually developed. Normally, high vascular tone is more common in women than men and is most marked in the fingers and toes; this may account for the sex incidence favoring females and the predilection for involvement of finger and toe joints. Steinbrocker and Samuels [109] made oscillometric readings and found that about 60 per cent showed signs of vasospastic arterial disturbance.

Metabolic Factor:

Block and Murrill[16] found no deviations from normal in total sulfur, total nitrogen and amino acid contents of total serum proteins in rheumatoid arthritic patients. Such negative findings appear to invalidate any suggestion that an altered composition of total serum proteins in arthritic patients reflects disturbed sulfur metabolism. The total lipid, total cholesterol and phospholipid contents of the plasma were also found to be normal.[17] A slight but definite negative calcium balance, probably indicative of increased rate of calcium metabolism, was found in each of nine cases of rheumatoid arthritis studied by Ropes, Rossmeisl and Bauer:[90] the calcium excretion rate varied directly with the degree of decalcification noted roentgenographically.

Endocrine Factor:

There is no conclusive evidence that an endocrine imbalance plays any role in the production of rheumatoid arthritis. The simultaneous occurrence of some endocrine dysfunction is no more frequent than can be explained by chance, according to Davidson.[29]

Psychogenic Factor:

Opinions varied regarding the importance of psychogenic factors in the etiology, precipitation and clinical course of rheumatoid arthritis. Halliday[57] was convinced that emotional upsets were frequent precipitating causes of rheumatoid arthritis; a "definite upsetting event" was found antecedent to the onset in nine of twenty patients, and in seven emotional conflicts were thought to have provoked recurrences. In contrast, emotional disturbances were rarely related temporally to the onset in soldiers (1 of 100 cases), less often than other factors such as infections or physical exposure.[38]

TREATMENT

Management of Foci:

The attitude toward focal infection has become more and more conservative. The majority of clinicians agree that only definite foci should be removed, and then with the view of improving general health rather than curing the disease. Only occasionally does a well developed rheumatoid arthritis show definite improvement following the removal of an obvious local infection; eradication of definite foci should be undertaken "with hope but without promise." Most agree that devitalized teeth with roentgenographic evidence of periapical abscesses should be extracted.[9,52,115] But devitalized teeth showing no periapical rarefaction should be regarded more conservatively;[33] they should be checked roentgenographically at intervals, and before extraction is accomplished the risk of interfering with nutrition by removing necessary mastication surface should be weighed.[96] Recurrently inflamed tonsils probably should be removed for reasons of general health, but Slocumb and associates[109] reported definite clinical improvement from tonsillectomy in only 5 per cent of patients whose infected tonsils were the only discoverable focus. Shuster[97] obtained improvement following sinus surgery in only three of twenty-four early cases (12 per cent) and in one of eighteen (6 per cent) advanced cases. The evidence is distinctly against the importance of the gallbladder, intestines, genito-urinary system and female pelvis as sites of focal infection in rheumatoid arthritis, according to Short and Bauer.[96]

Rest:

Pemberton[80] believed that rest as a form of therapy was neglected by physicians; a survey showed that fewer than 11 per cent prescribed it. The majority agreed that "complete bed rest" was indicated only in severe, acute or febrile cases.[46,56,58] and during later flare-ups accompanied by local heat and severe pain. For chronic cases a minimum prescription of rest should be ten hours at night and two separate periods of one hour during the day.[88] During such periods the affected joints should be placed in the best possible position to insure the maximum function should fixed deformity ultimately develop. Daily systematic passive and active exercises to prevent joint stiffness and muscle atrophy are of utmost importance; these should be gentle and non-weight-bearing during the more active stages.

Diet:

Because most patients show a weight loss, a high caloric diet complemented with adequate vitamins and minerals is usually indicated,[98,39] but there is no special food substance which should be eliminated or which is specifically required by patients with rheumatoid arthritis.

Vitamins:

There is no known antirheumatic vitamin. However, the daily requirement of vitamins may actually be greater in patients with rheumatoid arthritis than in normal individuals[71] and the addition of extra vitamins as a "booster" to general health can be considered as good practice. The course of the disease evidently is not altered by saturating the patient with any one vitamin. Large doses of thiamine chloride,[46] ascorbic acid[69] or vitamin A[47] fail to influence the symptoms.

Vitamin D:

Because of enthusiastic lay advertising and publicity which "overemphasizes part truths and overlooks the rest of available information," high potency vitamin D therapy recently has been resurrected, and has become a popular treatment for "rheumatic conditions," including rheumatoid arthritis.[98] Vitamin D in large doses may accomplish reduction of pain in some patients with rheumatoid arthritis,[99] but little or no objective change is observed.[47,46] Reductions in erythrocyte sedimentation rates and alterations in the clinical course are rarely encountered. Although the majority of investigators believed this treatment to be of little or no value,[111,69,66,18] some[104,34,73] still reported enthusiastic results.

Massive vitamin D therapy is not without danger.[71]

Signs of early toxicity include sweet taste, nausea, vomiting, polyuria, polydypsia and occipital headaches.[98] Severe renal damage due to deposition of calcium in the renal parenchyma with resultant azotemia, albuminuria and cylinduria may result if these symptoms are ignored; two such cases, one with accompanying extensive calcifications about joints, were reported.[29] Toxic reactions were said to be encountered less frequently with the electrically activated vaporized sterol (Whittier process) than with ultra-violet irradiated ergosterol (Steinbock process).[104]

Analgesics:

Salicylates are the mainstay for relief and usually are as effective or more effective than others. Most patients can tolerate 40 to 60 grains of acetylsalicylic acid daily without any apparent injury.[32] Acetphenetedine occasionally may be more effective. Codeine is rarely necessary and morphine should be studiously avoided because of the danger of drug addiction. Demerol given orally was effective in relieving pain in 62 per cent of patients with rheumatoid arthritis investigated by Batterman,[13] but ambulatory patients often experienced unpleasant side reactions. Although less than for opium derivatives, an addiction liability exists and Demerol probably has little place in the treatment of rheumatoid arthritis.

Physical Therapy:

Proper home physiotherapy with the use of relatively simple apparatuses (radiant heat, contrast baths and douches, wet packs, paraffin baths, hot tub baths, etc.) is of utmost importance in the management of rheumatoid arthritis. Proper use of heat, massage, passive and active exercises can be taught to the patient or his family, and home physiotherapy is something which can be used every day of the year.[81] An electric pad or cheap heat lamp used consistently is of more therapeutic value than elaborate machinery which is only occasionally available.[76] Light massage over the muscles aids in circulation and relaxation, but the joint itself should not be rubbed. Massage does not increase muscular strength; this can be brought about only by active exercises.[82] In general, joint exercises should be started as soon as any degree of painless motion is possible. For an acutely swollen painful joint exercises should be delayed, but to wait too long favors development of permanent disability.[107] Exercises must be supervised and graduated; they should not be done too enthusiastically, and if increased pain persists for more than two hours after completion, exercise has been too vigorous;[88] "purposeless wiggling of joints" should be condemned.[98] Salicylates given beforehand may aid in accomplishing joint movement. Active muscle training such as muscle setting and resistant exercises are of extreme importance and should be instituted early. Movements involving extension rather than flexion should be encouraged. Hurt[64] gave the following principles for muscle building: for a poor muscle—exercise with gravity eliminated; for a fair muscle—exercise against gravity or its equivalent; for a good muscle —exercise against gravity and graded resistance.

Chrysotherapy:

According to Dawson, Boots and Tyson[30] chrysotherapy offers greater promise than other forms of therapy, but they warned of its dangers and advocated its use only in the hands of careful clinicians. When carefully given, the good effects of gold salts far outweigh the risk involved.[58] In the experience of Smyth and Freyberg[102] gold therapy is "valuable in many cases" but "not uniformly beneficial" and "its potential toxicity is a definite objection to general use." Several[56,29,41,51,85,110] cautioned against relying on gold alone; chrysotherapy may be an important adjuvant but the patient should be given also the benefit of the general program included in a conservative regime. Extreme views were held by Key[69] who believed that chrysotherapy should be employed in "every case" of rheumatoid arthritis, and by Short[94] who concluded that "it carries a danger of toxicity too great for any but an indispensable drug."

Indications:

Until recently most physicians have restricted the use of gold salts to cases not amenable to more conservative measures. This practice is still adhered to by some;[115,98,105,26] but others, because of better results obtained, have encouraged its use in early cases.[102,110,58,22,56] Chances for complete remissions appear to be better if gold salts are employed early.[21] Most agree, however, that chrysotherapy should be delayed for at least three to six months after the onset, or until the likelihood of a spontaneous remission seems remote. Gold salts should not be used in any rheumatic affliction other than rheumatoid arthritis, with the possible exception of psoriatic arthritis.[51,26]

Contraindications:

Severe diabetes mellitus, disseminated lupus erythematous, nephritis, ulcerative colitis, hepatic insufficiency, blood dyscrasias and hemorrhagic tendencies are generally accepted as contraindications. Allergy,[71] pregnancy[51] and history of exfoliative dermatitis[26] were also mentioned recently, but hypertension was not considered as a contraindication by Stengel.[110]

Preparations:

Those compounds most commonly used in the United States are listed in Table 1.[58,45,105]

Dosage:

Gold is the active principle and since the gold content is different in various compounds dosage must be figured in equivalent gold doses.[45] A favored treatment schedule with myochrysine (50 per cent gold) has been to inject increasing amounts of the salt, from 10 mgm. to 100 mgm. weekly, until a total of 1.0 to 1.5 grams has been given. Gold thioglucose (Solganal-B Oleosum) also contains 50 per cent gold, but is absorbed more readily, and in order to have

TABLE I.—*Gold Preparations in Common Use*

Chemical Name	Proprietary Name	Solubility in Water	Physical State	Gold Content Percent
Gold Sodium Thiosulphate	Sanochrysine	+	Aqueous solution	37
Gold Sodium Thiomalate	Myochrysine	+	Aqueous solution	50
Gold Calcium Thiomalate	Calcium aurothiomalate	—	Oil suspension	50
Gold Thioglucose	Solganal-B Oleosum	+	Oil suspension	50
Gold Thioglycolanilide	Lauron	—	Oil suspension	54

an equal amount of gold retained about 150 per cent of the dose for myochrysine is required.[46] Gold thiosulphate contains only 36 per cent of gold and proportionately larger doses are needed. Because fewer toxic reactions result with smaller weekly doses, most authorities now use doses not exceeding 50 mgm. per week.[46,58,55,112,22] Freyberg found that weekly doses of 25 mgm. gave inferior results. Common practice has been to give one, two or more series or courses of gold salts (1000 to 2000 mgm. each) with rest periods of two to six months between courses. The frequency of relapses during rest intervals prompted Hall[55] to give a single course followed by maintenance doses of 50 to 100 mgm. once a month for six months or longer. This is now a popular plan of treatment and maintenance doses (once every three to four weeks) for periods of one to three years following an initial course are being given by some. With a newer insoluble preparation, gold thioglycolanilide (Lauron), claimed to be substantially less toxic, much larger doses were recommended[87,110] (initial doses of 25 mgm., then gradually increasing the weekly doses to as high as 300 mgm. and total dosages as great as 3.750 mgm.).

Mode of Action:

Despite extensive research during the past few years the mechanism of how, why and where gold salt therapy works is unknown.[45] The results of recent experimental work on the metabolism of gold salts will be reviewed elsewhere.[60]

Results from Chrysotherapy:

Results from recent investigations varied widely but in general about 50 to 70 per cent of patients were reported as becoming symptom free or notably improved. Results are usually better when treatment is begun in the earlier stages of the disease, but many late cases respond favorably and some early cases may be refractory. Ragan and Tyson[84] have reported their results, based on a three to five year follow-up study as follows: Complete remissions in 13 per cent; improvement in 76 per cent; no improvement in 11 per cent. Other recently published results are summarized in Table II.

Toxic Reactions:

Unfortunately, toxic reactions provide a definite drawback to the universal use of gold compounds for rheumatoid arthritis. Such reactions include: dermatitis (mild rash to exfoliative type), ulcerative stomatitis, ulcerative colitis, hepatitis, thrombocytopenic purpura, agranulocytosis, aplastic anemia, bronchitis, etc. Usually they are not encountered until after several hundred milligrams of the drug have been given[46] but may occur after very small initial doses (20-30 mgm.), during a second or third series, or even weeks after treatment is completed.[106] Ten authors recently reported the percentage of toxic reactions in their cases; the average was 37.1 per cent, with percentages ranging from 8.2 to 61.0. The majority of these were minor and disappeared

TABLE II.—*Recently Published Results of Chrysotherapy*

Authors	Number Patients Treated	Arrested or Markedly Improved (Percent)	Moderately Improved (Percent)	Unimproved (Percent)	Preparation
Dawson, Boots & Tyson	100	51	48	15	Myochrysine
McCarty	36	78			Myochrysine
Logefeil & Hoffman	74	65		14.7	Gold sodium thiosulphate
Smyth & Freyberg	80	61			Myochrysine, gold sodium thiosulphate, gold sulfide
Short	31	19.1			Solganal-B & Myochrysine
Thompson & Wyatt	26	61.3		37.6	Myochrysine & gold sodium thiosulphate
Gardner	250	70-80			Solganal-B
Cecil, Kammerer & De Prume	197	66	20	14	Myochrysine, Solganal-B & gold sodium thiosulphate
Price & Leichtentritt	101	60			Myochrysine & Solganal-B
Ray	50	50	25	12	Calcium thiomalate
Graham & Fletcher	95	66	20	13	Myochrysine
Cohen & Dubbs	122	53		13	Solganal-B
Hartung	264	54			Myochrysine
Rawls, Gruskin, Ressa, Dworzan & Schreiber	100	53	21	14	Solganal-B
Fraser	57	42	21	18	Myochrysine
Robinson	200	50		25	Myochrysine
Stengel	30	56.6	23	10	Lauron
Furlong	16	62	13	25	Gold sodium thiosulphate
Winkler	32	46.9			Myochrysine

promptly upon discontinuance of the drug, serious reactions being encountered in not more than 5 to 10 per cent of cases treated.[30] A few fatal reactions have been reported recently; one from ulcerative enteritis,[22] one from thrombocytopenic purpura,[30] one from multiple small cerebral hemorrhages.[106] The current mortality rate has been estimated to be between 0.38 and 0.43 per cent.[61]

Treatment of Toxic Reactions:

Agranulocytosis, a toxic reaction capable of causing death, may now be controlled with penicillin.[5] Serious reactions including severe exfoliative dermatitis, thrombocytopenic purpura and agranulocytosis have responded favorably and rapidly to intramuscular injections of British Anti-Lewisite (BAL), according to recent reports.[23,74,83] These preliminary reports give promise that BAL may prove to be an effective weapon against serious gold reactions.

General Conclusions on Chrysotherapy:

These were drawn by Hench:[61] "The toxicity inherent in chrysotherapy makes it unsuitable for use by average practitioners without special experience. Gold salts are not constantly effective, are not specific, are at best a palliative and have not been proved to be a necessary adjunct to routine measures. A strong counterargument is that gold may well accomplish in six months or less what nature or general measures may take six years to accomplish. Surgeons and patients do not hesitate to accept the risks of cholecystectomy or hysterectomy to relieve symptoms much more bearable than those of progressive rheumatoid arthritis. Yet the mortality rates of such procedures are as great or several times greater than that of chrysotherapy. The use of gold salts seems entirely justified (1) in cases of progressive rheumatoid arthritis unrelieved by a reasonable but not too long a period of older and safer methods of treatment, (2) when the patient clearly understands and accepts the risk, and (3) when the physician is in a position to give the treatments with the necessary clinical and laboratory safeguards."

Artificial Hyperpyrexia:

Current opinion is that prolonged febrile reactions produced by the Kettering hypertherm or by electromagnetic induction are of little value in rheumatoid arthritis. Although occasionally transient symptomatic improvement may ensue, such improvement is seldom sustained.[36] Geiger[49] could see no advantage of artificial prolonged fever over typhoid vaccine reactions.

Roentgen Therapy:

The results of roentgen therapy in peripheral rheumatoid arthritis are disappointing when compared with the rather encouraging results of such treatment in rheumatoid spondylitis.[103] But local roentgen therapy (600 to 900 "r") to individual large joints which are persistently painful and resist other forms of treatment (such as boggy knees and painful restricted shoulders) may, not infrequently, render significant relief.[112,68]

Kaplan[65] found radon ointment "absolutely ineffective and useless" because it had little penetrating power. Conclusions were that "to assume it can influence the underlying joints or bones is entirely erroneous."

Vaccines:

The trend is definitely away from the use of vaccines in the treatment of rheumatoid arthritis, even among some formerly enthusiastic supporters.[46] In general, "vaccines have made out a bad case for themselves,"[32] and one author[79] believes them to be harmful because the patient is allowed to "drift into a hopeless and helpless condition when other measures might have been used successfully." But a few proponents still exist and they continue to publish good results. Such results appear to be about the same regardless of what vaccine is used: e.i., 75 per cent "definite improvement" with intravenous streptococcus vaccine,[115] 80 per cent "marked improvement" with vaccines prepared from several strains of diphtheroids,[19] varying degrees of improvement in 76 per cent with streptococcus-staphylococcus combined antigen.[114] To rheumatologists who use accepted criteria for the diagnosis of rheumatoid arthritis, who use objective signs as well as subjective symptoms as standards for improvement, who are cognizant of the natural fluctuations in the clinical course of the disease, and who base results on controlled studies, such claims for vaccines appear extravagant indeed.

Antibiotics:

The two antibiotics now commonly used for various infections, penicillin and streptomycin, have been of no value in rheumatoid arthritis. Boland, Headley and Hench[4] gave penicillin (daily doses from 120,000 to 320,000 Oxford units and total doses from 1,300,000 to 3,250,000 units) to ten soldiers with early but progressive rheumatoid arthritis and found the results to be negative. Seven of the ten cases showed no improvement, one patient was worse, one showed slight subjective but, no objective improvement, and one demonstrated moderate objective and subjective improvement in some, but not all, of the involved joints. Because of the capricious nature of rheumatoid arthritis, the improvement in these two cases was regarded as unrelated to the penicillin. Comroe's[25] results were the same; six patients treated for periods of two to four weeks received no benefit.

Antireticular Cytotoxic Serum:

The so-called "A.C.B. Serum" ("Russian serum") of Bogomoletz and Strazhesko was tried by Bach[8] in 35 cases and by Freyberg[63] in 30 cases of rheumatoid arthritis. The results were essentially negative.

Sulfonamides:

These have proved useless.[4]

Sulfur:

There is no biochemical or metabolic indication of need for, or benefit from sulfur medication, according to Freyberg.[46] Treatment with sulfur preparations has been abandoned at most clinics.

Neostigmine (Prostigmine); Physostigmine:

Relaxation of muscle spasm, relief of pain and increased motion in 16 of 19 cases of rheumatoid arthritis was claimed by Trommer and Cohen[113] with the use of neostigmine bromide given orally and/or subcutaneously. Later even better results were reported with physostigmine salicylate given subcutaneously. However, Balboni, Hollander and Kydd[12] were unable to substantiate Trommer and Cohen's results and concluded that "prostigmine induces no significant relaxation of muscle spasm in rheumatoid arthritis." At the 1946 meeting of the American Rheumatism Association several rheumatologists expressed disappointment with this type of treatment.[63]

Orthopedic Measures:

Simple splints made of plaster aid greatly in preventing deformities and should be employed early while medical measures are being instituted. During acutely painful stages plaster molds are most useful but must be removed at least once daily to allow motion.[58,112] Prolonged splinting to the point of marked muscle and bone atrophy was warned against.[115,101] Flexion contractures of knees frequently may be corrected by a series of posterior plaster shells; traction and manipulation, wedging casts and forceful stretching are ineffective and often harmful.[75]

The indications for various orthopedic procedures designed to correct flexion contractures of knees were outlined:[72,31] manipulation under anesthesia for mild deformities due to capsular contractures without serious joint damage; posterior capsulotomy for resistant flexion contracture with little destruction of articular surfaces; osteotomy for fixations in bad position for weight bearing and with extensive destruction of joint surfaces; arthroplasty for stiff joints due to bony ankylosis; arthrodesis for severely destroyed joints with persistent pain on weight bearing in patients who must stand at work, where stability is more important than movement. Kuhns obtained good results from posterior capsulotomies in 40 per cent of cases, from osteotomy in 36 per cent and from arthroplasty in 10 per cent. Synovectomy is sometimes resorted to for persistently swollen boggy knees without extensive articular destruction but the results are variable. Ghormley and Cameron[50] reported excellent results from this procedure in only 15.6 per cent, some improvement in 40.6 per cent and poor results in 40.6 per cent of cases.

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California Cancer Commission Studies*

Chapter VII

Childhood Cancer

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IN the literature one frequently encounters the statement that childhood cancer‡ is rare. *This is not true.* Cancer is one of the most important causes of death in children (Table I) and approximately 1.5 per cent of all cancer deaths are in the age group 0-14.[14] Unfortunately it is also frequently stated that childhood cancer is a hopeless disease for which all forms of treatment are of little or no value. This likewise is not true. *In many cases it is the time lag between onset of symptoms and recognition of the fact that a cancer exists—all too often many months —that renders hopeless the treating of the lesion, because it permits the disease to spread to such a degree that adequate therapy is impossible.* Early diagnosis and the immediate institution of proper treatment will materially reduce this death rate.

TABLE I.—*Deaths from Certain Causes*
United States, 1935*

Disease	Age 0-4	Age 5-9	Age 10-14	Total
Cancer†	393	243	267	903
Typhoid fever	165	242	363	770
Poliomyelitis, acute	323	201	192	706
Tetanus	230	173	156	559
Acute rheumatic fever	103	332	328	763
Diabetes mellitus	113	114	240	267
Acute endocarditis	86	126	179	391
Acute myocarditis	90	35	34	159
Chronic myocarditis	37	57	78	172

* Mortality Statistics 1935, U. S. Dept. Commerce, U. S. Govt. Printing Office, Washington, 1937 (Table 7, page 200).

† In addition there were 129 deaths from Hodgkin's Disease, and 699 deaths from Leukemia in age group 0-14, which should be classified as Cancer deaths. The total, then, is actually 1,731, or more than twice that of the other listed causes.

Copied from Dargeon.[6]

The early symptoms[6] of childhood cancer are often vague and obscure, and frequently are similar to those seen in more common childhood diseases. It is only in the late phases that the commonly described signs of anorexia, weight loss, anemia, large palpable masses, etc. are seen. *To diagnose it early*, one must suspect its possibility in any child with:

1. Enlarged lymph nodes which have persisted beyond the usual few days when they are due to infection, (Hodgkin's disease, leukemia, lymphosarcoma, nasopharyngeal cancer).

2. Intermittent fever and some anorexia and weight loss (Hodgkin's disease, lymphosarcoma, leukemia, Ewing's tumor, Wilms' tumor).

3. Nasal obstruction after two years of age, especially if the adenoids cannot be shown to be responsible, (nasopharyngeal tumor),

4. Vague, persistent slowly increasing bone pain in one extremity, even though no tumor is palpable (bone sarcoma),

5. Dilatation of one pupil, especially if a white or greyish reflex is present (retinal glioma),

6. Recurrent dizziness, headache, vomiting without nausea, unsteadiness of limbs, partial loss of vision, sensory changes, lack of sphincter control (brain and spinal cord tumors).

7. Bleeding from any body orifice (nasal, rectal, vaginal cancer).

8. One tonsil larger than the other (lymphosarcoma, lymphoepithelioma),

9. Painless masses of any kind in any location (Wilms' tumor, neuroblastoma, teratoma testis, sarcoma of muscle, fat, and fascia, lymphoblastomas). In other words, cancers of all types occur in children and no organ can be considered immune. *The most important single factor* in the early diagnosis of cancer, thus, is that *the physician* be constantly on the alert for its occurrence, and that his mind be so conditioned to suspecting its presence that he includes it in virtually every differential diagnosis.

The statistics dealing with the most common forms of cancer in childhood and their anatomical location are somewhat at variance, (Table II),[6] but it can be said that those most frequently encountered are:

1. Cancer of the Lymphatic System
 (a) Lymphatic leukemia
 (b) Hodgkin's disease
 (c) Lymphosarcoma
2. Cancer of the Bone
 (a) Osteogenic sarcoma
 (b) Endothelioma (Ewing's tumor)
3. Cancer of the genitourinary tract
 (a) Adenosarcoma of the kidney (Wilms' tumor)†
 (b) Teratoma testis
4. Retinal Glioma†
5. Cancer of the Central Nervous System
 (a) Brain tumors, especially of the cerebellum
 (b) Spinal cord tumors
 (c) Neuroblastoma sympatheticum, especially of the adrenal
6. Cancer of Soft Parts
 (a) Sarcoma of muscles, nerves, and fat.

‡ The word "Cancer," as used in this article, signifies all types of malignant neoplastic lesions, irrespective of their tissue of origin.

* Organized by the Editorial Committee of the California Cancer Commission.

† These lesions almost never occur after the age of 5.

TABLE II.—*Topographical Distribution in 1538 Cases of Childhood Cancer*

C. N. S.	370	Soft Tissue Sarcoma	100
Bone	317	Pharynx	32
Eye	206	Skin	30
G. U.	205	G. I. Tract	31
Lymphoid	185	Miscellaneous	48

In addition to the above list there are numerous reports in the literature of cancer in children involving the stomach, colon, lung, liver, ovaries, bladder, penis, prostate, tongue, tonsil and so on. *To repeat, cancer may occur in children in any of the types known in adults and with the same symptoms, and no organ can be considered immune.* Its early diagnosis and its cure are dependent on an alert and conscientious physician.

TYPES MOST FREQUENTLY ENCOUNTERED

Cancer of the Lymphatic System

Because of the sanitary regulation governing milk handling, tuberculous adenitis is not commonly observed in this country. Lymphoblastomas are probably as frequent as tuberculous adenitis in American children. The seriousness of lymphoblastoma requires that it be given priority in the differential diagnosis of every case of persistent (more than two weeks duration) cervical lymphadenopathy.

1. *Hodgkin's Disease* [5]

In its clinical features of lymphadenopathy, pruritus, cachexia, anemia, hepatomegaly and splenomegaly, it does not differ materially from its counterpart in adults. An eosinophilia frequently is present which is not often encountered in adults. One should be suspicious of the possibility of Hodgkin's disease in any child with enlarged lymph nodes which persist for more than a month, or who has a history of recurrent lymphadenopathy. A child with intermittent or recurrent fever may have this disease but the lymphadenopathy not be apparent because only mediastinal or retroperitoneal nodes are involved. In such instances, x-rays of the chest and careful palpation of the abdomen should reveal the true state of affairs.

The diagnosis is made by excision and examination of an enlarged lymph node, preferably from the cervical or axillary area. This should be done in any child with persistent or recurrent lymphadenopathy and *if negative should be repeated.*

Treatment is by divided doses of x-rays. If only a single and isolated group of nodes is involved, radical surgery or intensive x-ray therapy should be considered. There is a growing number of patients,[17] who, after radical destruction of the solitary group of nodes involved, have survived long periods of time without recurrence of the disease. Radio-active phosphorus has apparently not proven to be of any more benefit in adult cases than x-ray therapy. Nitrogen mustard compounds have occasionally been of benefit.

The prognosis is grave. However, a few patients live surprisingly long periods of time under conservative treatment. Craver [5] reports four patients living, three, three and a half, three and a quarter and thirteen and a quarter years, respectively, out of eight cases. Thus in the presence of a diagnosis of Hodgkin's disease, one should not adopt a hopeless attitude, but should pursue an intelligently planned course of treatment. If this were to be done in each case, a few might have long term arrests, and most would have a comfortable existence.

2. *Lymphosarcoma* [5]

In general, the clinical features of this disease are about the same as in Hodgkin's disease. Clinically, the differentiation may be impossible and the diagnosis is usually established only by excision of an involved lymph node. When there is symptomless enlargement of one tonsil, lymphosarcoma may be present.

Treatment is by divided doses of x-rays. As in Hodgkin's disease, if only one isolated group of nodes is involved, serious thought must be given to either intensive radiation therapy, or radical surgery. Radio-active phosphorus has apparently been about as efficacious in this disease as x-ray therapy.[9]

The prognosis is much poorer than for Hodgkin's disease and few live more than two years.

3. *Lymphatic Leukemia* [5]

The history of these cases frequently begins with an episode suggestive of flu or an acute upper respiratory infection. There may or may not be lymphadenopathy, splenomegaly, and hepatomegaly at this time, the presence of which should, of course, immediately suggest the possibility of a malignant neoplasm of the lymphatic system. Usually, however, because of the prolonged recovery period, laboratory studies are initiated, in the course of which the cell count is depressed and not elevated; this is almost the rule rather than the exception. The smear, however, shows almost 100 per cent lymphocytes with many young forms.

Treatment is very unsatisfactory. These patients are quite sensitive to radiation and tolerate, if at all, only the smallest doses. Radio-active phosphorus has been of no apparent value in these cases, and possessed only the advantage of being tolerated better than other forms of radiation.[10] Fresh plasma [1] in relatively large doses—250 cc. one to two times a day—frequently stops hemolysis, and if given just prior to a transfusion will often prevent the hemolysis that usually follows such a procedure.

The prognosis is very poor. In children, leukemia runs an almost uniformly acute course, and few patients live more than six months.

BONE CANCER [3]

The first symptom is usually an insidious, intermittent pain, often worse at night, localized to one part of the skeleton, and ordinarily without systemic reaction or palpable mass. It is commonly described as deep and boring in character, or as a tearing and

stretching pain. As the disease progresses this pain gradually increases in severity until it dominates the patient's life. Because of the rarity of bone cancer, this pain is generally treated initially as a neuritis, or as "rheumatism" or as "growing pains," and the true picture not discovered until it announces itself by the presence of a mass. *Pain localized to one area of the bony skeleton and lasting more than a few days should lead to the suspicion of a bone sarcoma.* X-ray studies in several planes, and over a large area above and below the site of pain, should be made, and, if inconclusive, should be repeated and stereoscopic views secured. If the films show no alteration in bony structure, sarcoma can be ruled out. However, interpretation of films in early cases may be quite difficult, and if there is even a suspicion of alteration in bony structure, the films should be repeated at short intervals until the diagnosis of bone sarcoma can be definitely proven or discarded. A blood phosphatase [19,20] estimation may be of value in making the diagnosis as it is sometimes elevated when a bone sarcoma is present. However, phosphatase readings in children under 15 are difficult to evaluate because the normal range for them is 5 to 14 Bodansky units. No diagnostic reliance, therefore, should be placed on this determination, if the readings are in the normal range.

Differentiation between the pain of bone cancer and that due to osteomyelitis is usually possible because of the acute onset and severe systemic reaction that accompanies the latter disease. However, as will be discussed later, sub-acute or chronic osteomyelitis can be confused with a Ewing's tumor. In acute osteomyelitis, there should be a prompt response to specific penicillin therapy, which would not be true in a bone neoplasm.

Differentiation from rheumatic disease should likewise be possible because of the migratory aspect of the latter, its frequent involvement of more than one joint, the presence of local heat and swelling in the painful area, and the marked systemic reaction that usually accompanies this disease.

Neuritis can be confused with the pain of bone cancer, but should be differentiated from it by the character of the pain, its more widespread distribution, and the tenderness of the involved nerve with exacerbation of the pain on its manipulation.

"Growing pains" as a definitive diagnosis has no place in diagnostic terminology.

Once a tentative diagnosis of a bone neoplasm has been made it can only be confirmed or disproved by biopsy. This should be performed only by one skilled in the procedure. During the period of time in which the diagnosis is being established, the bone involved should be immobilized to reduce as much as possible the hazard of metastasis from trauma. Palpation of the lesion should be reduced to the minimum.

1. *Osteogenic Sarcoma* [3,4]

This tumor usually originates in the metaphyseal area and most often affects the femur, humerus, and tibia, in the order named. The various diagnostic points of pain, changes in bony texture on x-ray examination, presence of a palpable tumor, and alteration of the blood phosphatase level, have already been discussed.

Osteogenic sarcoma is radio-resistant and not suitable for treatment by x-ray. Amputation offers the only real hope for cure and, because of this tumor's tendency to travel up the marrow cavity, should be done above the joint next above the lesion. An exception to this rule is in the case of lesions at the distal end of the femur which show no spread up the marrow cavity. In such cases high thigh amputation is permissible. In some instances of widespread disease a palliative amputation will be needed to relieve the patient of intolerable pain.

The efficacy of Coley's toxin in this disease is doubtful but, because occasional startling results have followed its use, it is probably wise to use it postoperatively. The value of radio-active phosphorus and radio-active strontium in this lesion is not known.[18]

The prognosis is poor but should be improved if earlier diagnosis is made. About 15 per cent of the treated cases live five years or more without recurrence and are presumably cured.

2. *Endothelioma (Ewing's Tumor)* [10]

The symptoms and findings are similar to those given in the preceding paragraphs. The differentiation from an osteogenic sarcoma by x-ray may be impossible, and definitive diagnosis frequently rests upon a biopsy.

The lesion is not primarily medullary in origin as so often described, but is initiated in the subperiosteal or cortical bone, usually in the diaphysis. It may attack any bone, but has a predilection for the tibia, femur, pelvis, humerus, fibula, and ribs, in the order named. Because it is frequently associated with fever, leukocytosis, tenderness, and fusiform enlargement of the bone, and thus simulates an inflammatory process, the possibility of an endothelioma must be considered in every case of suspected subacute of chronic osteomyelitis. *Its x-ray appearance is subject to wide variation, and may resemble most any type of bone lesion.* It is only by keeping such factors as these in mind, and by a willingness to do an early biopsy, that an early diagnosis will be reached in this disease.

While these tumors are quite sensitive to radiation, experience has shown that radiation alone is almost always unsuccessful in controlling this disease. Amputation or resection of the involved bone is essential either with or without preoperative irradiation. Coley's toxins should be given postoperatively as they may be of real value in treating this disease.

The prognosis is much poorer than for osteogenic sarcoma and few survive more than two years. With earlier diagnosis the prognosis might be materially improved.

CANCER OF THE GENITO-URINARY TRACT [7,11]

Most childhood cancers of this system give rise to few if any symptoms until late in the disease when

a mass is found by accident. The hematuria, dysuria, and frequency, commonly seen in adults, is absent in children because the lesions are usually sareomas and thus do not involve surface structure.

1. *Adenosarcoma of the Kidney (Wilms' Tumors)*

The presenting symptom in about 60 per cent of these cases, is an accidentally discovered mass. Some cases, about eight per cent, have hematuria or dysuria and a few will have unexplained fever. The average age at discovery is between two and three years, the lesions being quite rare after seven. The only real hope for early diagnosis of this lesion is in well baby clinics and well baby check-ups by private physicians. Once the mass has been found it must be differentiated from other retroperitoneal tumors, hydronephrosis, and polycystic kidney. This is best done by intravenous and retrograde pyelography to show the deformed and displaced kidney pelvis on the side of the mass. These tumors are usually well encapsulated, but handling should be reduced to an absolute minimum to avoid the possibility of capsular rupture and massive local spread of the lesion. Wilms' tumors have a marked tendency to invade blood vessels and early metastases are frequent. For that reason treatment should not be delayed.

Surgical removal of these tumors is highly preferable to irradiation therapy, and should be done as soon as possible after the diagnosis is made. Size in itself is no bar to surgery, but this operation should only be performed by a highly skilled surgeon. X-ray therapy after operation is indicated.

The prognosis is not good only because so many of these patients have metastases at the time the primary lesion is discovered. However in one group of 20 patients, treated by x-ray alone,[8] there were five 5-year survivals, and in another group of 60 patients treated by surgery,[11] eight survived more than five years, and another six were alive and without cancer for from two to four and a half years at the time of the report. These figures indicate that with early diagnosis and proper treatment a high cure rate is possible.

2. *Teratoma Testis*[7]

The usual presenting symptom in this lesion is a painless swelling of one testicle. Unless metastases are already present and the cause of symptoms peculiar to their location, no other symptoms will be found.

Orchidectomy is the preferred treatment. Some men suggest a preliminary course of intensive x-ray to the testicle, and follow the orchidectomy with a course of radiation therapy to the area of lymphatic drainage. The radical lymph node dissection of Hinman is infrequently performed.

The prognosis is good. If no metastases are present when the diagnosis is made, about 75 per cent will live five years or longer, and if metastases are present, about 25 per cent will survive five years, without evidence of recurrence of the tumor.

RETINAL GLIOMA[12,15]

This is a common form of childhood cancer. Because they are believed by many to be a congenital type of tumor, it is possible that in many instances they could be detected at birth by careful opthalmoscopic examination. The first symptom in nearly every case, is a dilatation of the pupil. This inequality of the pupils unfortunately, is frequently disregarded by the physician until the tumor has grown large enough to be visible through it as a white or grey reflex ("cat's eye"). Neither the dilatation nor the reflex is always diagnostic of glioma, but the presence of either calls for an immediate and careful examination by a competent ophthalmologist. The very late symptoms and findings are glaucoma, distension of the globe, and pain. In over half of the cases, the objective findings are sufficient for diagnosis before the age of two. Occurrence of this lesion after the age of five is exceedingly rare. It is bilateral in more than 25 per cent of the cases.

Treatment is either surgical enucleation of the eye, radiological, or both. The method selected will depend entirely upon the size of the tumor when discovered, what vision, if any, is present in the eye, and whether or not the lesion is bilateral.

The prognosis in these cases is good. At the present time, about 50 per cent live five years or more without recurrence and so are presumably cured.[15] This percentage might well be increased by earlier diagnosis.

CANCER OF THE SOFT PARTS[15]

These are many and varied and in general it may be said that all lumps in fat, muscle, and fascia should be regarded with suspicion. While obviously the vast majority of such tumors will be sebaceous cysts, lipomas, angiomas, neurofibromas, fibromas, and so on, all should be watched. Any that show any signs of growth, or which seem immobile or attached to the skin as though infiltrating in type, should be widely excised and pathologically examined. The usual soft part malignancies are rhabdomyosarcoma, liposarcoma, fibrosarcoma, and neurogenic sarcomas.

The treatment of soft part sarcoma is amputation or wide surgical excision with the sacrifice of a wide area of normal tissue without regard for the disability to be caused by the procedure. These lesions are usually quite radio-resistant.

The prognosis is good if the lesion is diagnosed while still suitable for surgery. These lesions are frequently slow to metastasize and radical excision offers an excellent chance for cure.

Pigmented lesions of the skin are frequent and ordinarily of no significance. However melanomas are seen in children and any pigmented lesion which begins to grow should be widely excised immediately. *Under no conditions should a pigmented lesion be subjected to cauterization of any kind.* If a diagnosis of melanoma is made, a radical dissection of the tributary lymphatics should be performed about six weeks after the excision of the lesion. These lesions are quite radio-resistant.

CANCER OF THE CENTRAL NERVOUS SYSTEM [16]

Approximately 20 per cent of all the tumors of this area occur in the first two decades of life, the majority being primary in the cerebellum. While it is believed that most of these began in early childhood, the diagnosis is usually not made before adolescence. It is therefore of the utmost importance that doctors be aware of the earliest symptoms of such lesions and be prepared to instigate proper diagnostic precedures at once. The earliest symptoms in brain tumors are vomiting without nausea or other digestive disturbances, headache, and unsteadiness of the extremities. There may be perceptible enlargement of the head. Symptoms of this type should lead to a careful neurological and ophthalmological examination which if inconclusive should be repeated within two weeks and if still inconclusive the patient should be sent to a competent neurosurgeon. Pituitary tumors have their own special syndrome of gigantism, changes in hair, skin, and fat distribution, and disturbances of basal metabolism and sexual function. If the tumor is large enough to encroach upon the optic chiasm, there is progressive blindness and temporal hemianopsia. X-rays of the skull may be of value by showing enlargement of the sella turcica, widening of a suture line or bony erosion.

Cord tumors are more difficult to diagnose because they produce few symptoms other than sensory changes, until the loss of motor function appears. Where this appears is, of course, dependent upon the site of the tumor. Any child with weakness of the extremities or with apparent partial loss of control of bowels and bladder, should have a careful neurological study. Again, if the results are inconclusive, the patient should be sent to a competent neurosurgeon.

The treatment of these lesions is both surgical and radiological and is dependent upon the location and size of the tumor.

The prognosis is variable with the histologic type found at operation. As in all forms of cancer, the earlier the diagnosis, the better the prognosis.

SUMMARY AND CONCLUSIONS

Cancer in childhood, while said to be a rare disease, is one of the most important causes of death before the age of 15. Its early signs and symptoms are frequently obscure and are often similar to those of common childhood ailments. The long time lag between onset of symptoms and beginning of treatment frequently allows the lesion to progress to an untreatable stage and is partly responsible for the prevailing impression that childhood cancer is incurable. Early diagnosis, through a high index of suspicion on the physician's part, will bring about a higher rate of cure. The commonest cancers are lymphoblastomas, bone sarcoma, Wilms' tumor, retinal glioma, brain and spinal cord tumors. The overall percentage of cures in childhood cancer is not high but it has been shown that prompt and vigorous treatment in certain varieties will save 25 to 50 per cent of cases.

Chapter VIII of the Cancer Commission Studies, "Malignant Lymphoma" by Angus Wright, M.D., and Chapter IX "Myeloid Leukemia" by Gurth Carpenter, M.D., will appear in this section in the December issue of CALIFORNIA MEDICINE.

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EDITORIALS

Blood Banks in California

Confusion approaching some of the war-familiar scenes of yesteryear appears to have resulted in many places because of the recently announced plan of the American Red Cross to "establish" a nationwide system of blood banks for public use. Several California communities have already suffered from this uncertainty and much debate is still going on in many circles.

Briefly, the story is that the American Red Cross, seeking to perpetuate a wartime program in peacetime, has voted to set up a nationwide program of blood procurement, processing and distribution—all free. Dr. Ross McIntyre, former Surgeon-General of the Navy, has been retained as director of the program and the conditional approval of the American Medical Association has been secured. The conditions, set up by a cautious A.M.A. House of Delegates, required that approval of the local county medical society must be secured before the Red Cross would move into any community.

In practice, the A.M.A. conditions seem to have been short-circuited in some communities. The Red Cross maintains a large and active staff of field workers, some of whom have apparently been overzealous in their efforts to get the blood bank program started. By moving swiftly—and they are full-time paid employees—these representatives have swept some communities and local county medical societies off their feet, have secured the necessary county society approval and initiated operations. Other county societies have proceeded more cautiously and delayed their decisions pending adoption of a statewide policy by the California Medical Association. Such a policy is now available.

California has pioneered in the establishment and operation of community blood banks. The state has also fostered the establishment of banks in public and private hospitals; as of last November there were five community blood banks in California, nine in county hospitals and fourteen in private hospitals. Thus a vast aggregate of experience has already been gained and is available for other communities which contemplate the operation of blood banks. For processing the blood, there are the facilities in the community banks, plus those in public and private hospitals, plus those in two large commercial laboratories.

This combination of procurement centers and processing facilities is eloquent proof of the presence of both know-how and equipment for proper blood procurement, processing and distribution in California. Added proof, if needed, comes from the fact that all these blood banks suspended publicity during the war years, in order that the Red Cross blood procurement program for the armed forces might have the entire publicity field to itself.

Unquestionably, the tremendous publicity incidental to the Red Cross wartime blood procurement program, plus the expanded use of blood and its derivatives engendered by the war, have increased our consciousness of the benefits of blood. With such background, steps were taken many months ago by the California State Department of Public Health to encourage a statewide system of blood banks, so located that blood and its fractions could be easily and rapidly available to any point of need. This system was devised by representatives of the health department, the C.M.A., the Association of California Hospitals and others, acting jointly in the public interest. The findings of the committee were pub-

lished and presented to the Governor and the 1947 session of the State Legislature. Under the program adopted, the State Department of Public Health would act as "paterfamilias" in encouraging the establishment and operation of community blood banks, the existing facilities for processing blood would be used to their capacity, and the medical societies would cooperate in the procurement, processing and distribution of blood products.

The proposed program of the American Red Cross would eliminate this entire program and substitute for it a new system. Rather than building on the foundation which is already functioning, the Red Cross system would ignore it and build a new edifice.

Taking cognizance of these facts, the Council of the C.M.A. has adopted a set of principles for blood banks in California* and has advised county medical societies and others of the basis on which blood banks in California merit medical approval. These principles reiterate the soundness of the State Department of Public Health program, the fact that blood banks can best operate as non-profit community enterprises, and that civic and other organizations can cooperate fully in stimulating the interest of donors. Further, these principles state that in the belief of the C.M.A. Council the functions of the American Red Cross do not include the procurement and processing of blood and its derivatives, but should be confined to the "procurement of donors and the transportation of blood." The interest of the American Red Cross in these phases of the program is recognized with appreciation.

Here is a clear set of basic principles for the establishment, maintenance and implementation of blood banks throughout California. It is hoped that the confusion which has been surrounding this important project may now disappear and the communities of the state move forward to real accomplishment for the public benefit.

* See Council minutes, page 341, this issue.

Mr. DeVoto Thinks—This Far

In the September issue of *Harper's Magazine* appears an article entitled, "Doctors Along the Boardwalk," by Bernard DeVoto. Written as the observations of an outsider at the Atlantic City A.M.A. centennial meeting, the article hits the high spots of the convention, comments on the scientific meetings, the excellent technical and scientific exhibits, the medical films and other appurtenances of a large and —according to competent observers—wholly successful scientific gathering.

From a literary point of view, the article is admirably done. The author, a former instructor in English at Northwestern University, has graduated from the academic world into the realm of writers and has performed creditably in this effort. His most recent novel, *Mountain Time*, is concerned with the life of a surgeon, which fact is claimed by his magazine publisher as making him a well qualified observer of a medical meeting.

Mr. DeVoto skips from one portion of the A.M.A. session to another with considerable agility and humor. He takes up the travels of "Old Doc" from anyone's home town and carries him through the meetings and exhibits, even down to his standing in line to get his initials stamped on a plastic case for a package of Camels while across the exhibit hall he listens to the exhortations of Philip Morris. The ribbing is gentle but present, honest and probably deserved. "Old Doc" is at least given credit for having some brains in his head and representing a slightly different type of convention attendant from those at other notable national gatherings.

Throughout the course of that much of his article Mr. DeVoto saw fit to stick to his reportorial assignment and to record his actual observations in a well-mannered story employing a vocabulary of charm, power and breadth. However, when he gets into the A.M.A. House of Delegates, into the business part of the meeting, he trips over himself quite badly. Here he exhibits a bias which could scarcely have come to him naturally, but which must have been planted and carefully nurtured in his mind. Here he forgets his role as a reporter and turns propagandist. Here he exhibits, for the readers of *Harper's Magazine* to see, the exact type of intellectual approach to a broad public problem that he finds abhorrent in the doctors meeting as A.M.A. Delegates.

Mr. DeVoto's comments on the House of Delegates are pretty well concentrated on a discussion of compulsory health insurance. And, while he sees fit to mention some *con* arguments in the process of dismissing them, he takes it upon himself to bring out all the *pro* side of the picture and even to bring in some outside comments and quotations to bolster his case.

He speaks of the "party line" of the House of Delegates, referring to medicine's attitude toward socialized medicine as "so unrealistic that it suggests the need of psychiatric scrutiny." He ridicules such medical tenets as the free choice of physician and the medical desire to prevent third party intervention between the physician and his patient. He brushes aside the medical desire to preserve sound medical practice as an insistence on "complete, unsupervised control of any health program that may evolve." He falls for the old claims about "preventive medicine," pontifically declares that compulsory health insur-

ance is a *sine qua non* for the American people to receive medical care, and insists that medically-sponsored prepayment plans have intentionally set the rates for voluntary prepayment services "so high that they will be out of the reach of most people." Finally, he preaches the doctrine that compulsory health insurance is inevitable.

These claims have been refuted so frequently that they need no further comment here. It is not too difficult to visualize the source of these beliefs, if they are such, particularly since the publication of Congressman Harness' report on propaganda activities and expenditures by six Government agencies in behalf of a federal system of state medicine.

The interesting side of it is that a writer of world renown, a former university faculty member, can and will swallow whole a well prepared campaign of propaganda without inquiring too closely into its source and its truth. How can such an author give credit to the doctors on one side for a superior thinking capacity and then cut off their thinking processes at an imaginary line between medical progress and social stagnation? How can such a one justify a reportorial production in which he has interlarded so much that is subjective? The publishers of the magazine may well be excused for printing a story by an author whose name means circulation; that is a commercial privilege in our American system of economy. But how can the author himself condone a fifty-fifty piece of writing which starts out as a fish and ends up fowl?

May we suggest to Mr. DeVoto that the type of governmental control of medical practice which he rates as inevitable would be the mere starting point for a control which would engulf him and other writers as well? May we suggest that he not lose sight of the imperative need of maintaining the quality of medical care and not jettisoning it in favor of what *might* be a larger quantity? May we suggest further that he might profit by at least looking over some of the medical propaganda which he protests, just as carefully as he has looked into the social planners' propaganda which he has swallowed whole?

Several years ago the American public was momentarily titillated by a drama critic's report on a new play in which the heroine, more noted for her beauty than her acting ability, was stated to have "run the gamut of emotions from A to B." Possibly Mr. DeVoto could gain ground by getting a little farther into the alphabet of medical economics.

CLINICAL CONFERENCE

FROM THE MEDICAL STAFF CONFERENCE OF THE UNIVERSITY OF CALIFORNIA HOSPITAL, SAN FRANCISCO, MARCH 19, 1947

CASE PRESENTATION BY DR. GOFMAN:* The patient is a 31 year old married housewife who entered the hospital on February 21 with fever, abdominal pain and tenderness of 30 hours' duration. The present illness began two years ago when she first noted transient ankle edema at the end of the day for periods of two or three days at a time. During the year before her entry she noticed a generalized loss of energy. In October of last year she had all of her upper teeth extracted. Following this there was drainage of yellow pus from her gums for three weeks, associated with swelling and tenderness of the gums. In December the gums were scraped by her dentist with apparent healing. On January first, she awoke to find herself swollen throughout. Her eyes were swollen shut; there was edema of the hands and of the legs, and swelling of the abdomen. She was treated throughout the month of January by her local physician with thyroid extract three grains a day, vitamins, and mercurial diuretics, without improvement. On February 20, after having had the edema for about a month and a half, she noted pain in the lower left quadrant followed by the development of a red rash over the entire umbilical region of the abdomen, associated with a couple of shaking chills and fever. She was then advised to come into U. C. Hospital and did so 30 hours after the development of rash, abdominal pain and fever.

Her past history includes scarlet fever at the age of 12 without known complications. At age 20 she had her only pregnancy, during which time no hypertension, albuminuria, or edema was noted.

On entry the temperature was 37.0° C. There were generalized edema and erythematous lesions over the entire lower half of the abdomen and the upper part of the left thigh. The rash was painful and quite tender to palpation. The diagnosis of erysipelas was made. Penicillin was given, 50,000 units every three hours. Within two days the temperature had come down to normal and the pain and redness had disappeared.

The major laboratory findings on entry were as follows: The NPN was 36. (normal). The blood CO_2 and chloride were definitely low. The serum proteins were down to 4.05 grams per 100 cc. with a reversal of the albumin-globulin ratio. The serum sodium was low. The serum calcium was 7.8 grams per 100 cc.; the phosphorous 5.4 grams per 100 cc. Subsequently the CO_2 and chloride showed no significant rise. The proteins remained in the neighborhood of 4 to 5, with a low albumin. The serum potassium was 2 millequivalents per liter. Potassium chloride was given, 6 grams a day, without any essential change in the serum potassium or sodium. After several days of therapy the cholesterol was 444 mgm. per 100 cc. and the serum was obviously milky. A 24 hour urine specimen revealed a protein output of 30 grams. The 24 hour sodium chloride output was 1.5 grams. Routine urinalyses showed occasional granular casts, a few red cells and white cells. Maximum concentration was 1.026. The hemoglobin was high, (15 to 16 grams) before therapy. On the tenth of March, a course of concentrated salt-poor albumin was started, 50 grams a day being given intravenously. After two days of this therapy the edema decreased visibly, the hemoglobin was back up to 14.5 grams. The patient had anorexia throughout the hospital stay, plus some nausea and vomiting. The approximate dietary protein intake was 20 grams a day. The weight she had maintained for the last couple of years had been around 53 kilograms. When she came in it was 62 kg. With some spontaneous diuresis it dropped to 59.5 kg. At the end of the administration of 300 grams of salt-poor albumin, it was 54.5 kg.

DR. JAMES HOPPER, JR.:† I would like to call attention to a few significant symptoms. . . . (Patient was brought in.) Can you tell us how long you have been bedridden?

PATIENT: Since the tenth of January.

DR. HOPPER: Why can't you get up?

PATIENT: Because I get dizzy, and weak and my ears start ringing.

DR. HOPPER: I think these symptoms are very significant, and later we shall try to demonstrate to you that they are dependent upon changes in blood and plasma volume. Another symptom worthy of note is the anorexia. This greatly complicates her treatment which, in part, is one of maintaining protein nutrition.

DR. LESLIE L. BENNETT:‡ This patient presents a typical picture of chronic glomerulonephritis in the nephrotic stage. The diagnosis of glomerulonephritis as opposed to nephrosis is established by the presence of red blood cells and red cell casts in the urine. It is important for the students to remember that chronic glomerulonephritis may be present itself in a variety of clinical forms. The clinical picture may be dominated by hypertension with its attendant cardiac enlargement, hypertensive encephalopathy, or congestive heart failure. Uremia and uremic symptoms may be predominant. Or we may see the chief physiological disturbance to be the albuminuria with its attendant reduction of the plasma protein and

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consequent edema. This patient is a pretty typical example of this last type. She has no hypertension and little evidence of renal failure, but she has marked albuminuria, plasma protein depletion, and edema.

There has been some question in this patient as to whether the low plasma sodium reflects inability of the decreased kidney to conserve sodium, resulting in the depletion of plasma chlorides and bicarbonate as well. I do not believe that this is the case. We know that at the pH of normal blood the plasma proteins are present largely as anions and require the presence of about 13 milliequivalents per liter of sodium ion to maintain electroneutrality. Therefore a reduction of the plasma proteins must as necessity be accompanied by a reduction of plasma fixed base. In the present case the reduction of plasma sodium is almost exactly that predictable from the reduction of the plasma protein. Another way of looking at the same phenomenon is to remember that as the plasma proteins are reduced the electrolytic composition of the plasma must approach that of the interstitial fluid, which normally contains less sodium than does the plasma.

From a therapeutic point of view the immediate goal of treatment is two fold: first, the relief of the edema, which is the origin of the subjective symptoms, and second, the restoration of the depleted plasma protein. Because of her anorexia she has presented a great practical problem in this regard. As was shown, her average dietary intake of protein has been around 20 gm. per day while her urinary output of albumin has been around 30 gm. per day. Thus, she had a negative nitrogen balance during most of her hospital stay and it is not surprising that she showed little improvement. The use of salt free concentrated human albumin is perfectly rational, and it has been an effective diuretic agent. However, the effect of the albumin has not been permanent, and if she does not receive it the edema again increases in severity within 48 hours. I would be inclined to think that the ultimate prognosis for this patient is poor because of the degree of albuminuria and its duration, the evidence suggestive of renal failure, and her failure to respond to anything except concentrated albumin which itself has only palliative results.

DR. HOPPER: I am going to ask Dr. Mudrick to review the blood volume studies for you, since he did the work.

DR. CHARLES J. MUDRICK:* Summarized in the chart are figures relating to blood and plasma volume fluctuations in response to albumin therapy. We have correlated: (1) changes in serum protein concentration and (2) total or absolute amount of circulating serum proteins, (3) packed cell volume, and (4) albumin intake and urinary wastage of protein with the blood volume fluctuations.

When this patient first came in, her total serum proteins were 4.1 grams per 100 cc. Shortly thereafter her PCV was 44. The next few days it was noted the hemoglobin was rising up to about 116 per cent. At this time, February 27, we found that her total blood volume was 3,300 cc., and the red cell volume was 1,550 cc. Serum proteins determined by the falling drop method were 4.4 grams per 100 cc. Knowing the total blood volume, we were able to calculate the total circulating protein, which was 77 grams. In the next few days the packed cell volume and the hemoglobin continued to increase. The final blood volume before giving albumin, was decreased to 2,960 cc. This is definitely below normal for a female with her ideal weight of 55 kilos, and explains partly why, on arising, she felt dizzy and weak. It

* Assistant in Medicine, University of California Medical School.

Table Showing Effect of Salt-free Albumin on Blood Volume of Patient in Nephrotic Stage of Glomerulonephritis

Date	Salt-Free Albumin Given	Total Blood Volume in cc.		Plasma Volume in cc.	RBC Volume in cc.	Packed Cell Volume	Total Serum Proteins in Grams per 100 cc. of Blood	Total Circulating Proteins in Grams	Total Urinary Proteins in Grams per 24 Hours
2-24-47						44.0			35.9
2-27-47		3300	60 cc/kilo	1750	1550	46.9	4.40	77.0	
2-28-47						50.0	4.79		23.8
3-10-47	50 gm.	2960	54 cc/kilo	1413	1545	52.1	3.28	46.3	28.0
3-11-47	50 gm.								20.0
3-12-47	50 gm.	"3270"	59.3 cc/kilo	"1720"	"1550"	47.2	3.66	"63.0"	19.0
3-13-47	50 gm.								
	Before Albumin	"3300"	59.3 cc/kilo	"1750"	"1550"	46.8	3.66	"64.0"	30.8
	After Albumin	"4220"	76.5 cc/kilo	"2660"	"1550"	36.7	4.29	"114.0"	
3-14-47	50 gm.								
	Before Albumin	"3210"	58.4 cc/kilo	"1660"	"1550"	48.2	4.08	"68.0"	16.0
	After Albumin	"4220"	76.5 cc/kilo	"2660"	"1550"	36.7	3.77	100.0	
3-21-47	50 gm.								
	After Albumin	3520	64 cc/kilo	2140	1380	39.2			20.0
3-31-47	50 gm.								
	Before Albumin	2550	46.4 cc/kilo	1430	1130	44.3	3.44	46.5	
	After Albumin	"3300"		"2170"	"1130"	34.2			

NOTE: The figures in quotation marks above are calculations based on an assumption that the RBC volume has remained constant for the period 3-12-47—3-14-47 inclusive. This is a fair assumption since the RBC volume for ten days preceding had remained constant as noted by the figures for these days. Actual blood volume determinations could not be carried out as frequently as desired due to difficulties with vein puncture.

is known in normal individuals who stand after lying down for several hours that the packed cell volume increases and there is a lowered blood volume due to loss of fluid of the blood. We discovered that after giving the albumin for two days the blood volume returned approximately to the previous level. However, at this time the patient was much better subjectively. Then, on the 13th and 14th, we took the packed cell volumes before and after the albumin was given. Using the packed cell volumes, we were able to calculate the blood volume, assuming that the red cell volume was approximately the same during this period of time. On two separate occasions they were actually the same. So, using this figure, we were able to determine the total blood volume. Immediately after the albumin was given the blood volume had increased markedly and was within normal limits. Eighteen to 24 hours later, the blood volume had diminished a thousand cubic centimeters, or 24 per cent of the total. This, apparently, is all in the form of the plasma loss. The determination of total circulating proteins shows that the total circulating proteins increased from 46 grams to 64 grams after 100 grams of albumin were given in two days. At the same time the urinary protein loss, taken for several days previous to giving the albumin and several days after, remained constant. The increase of 18 grams illustrates that about 80 per cent of the albumin had been lost as far as the blood stream is concerned, and that this was not lost in the urine, but was actually metabolized by the patient.

Dr. Hopper: I would like to stress again the relationship of blood volume to the symptoms of dizziness. It was noted that there was a marked drop in blood pressure when the patient raised from a recumbent to the sitting or standing position, accompanied by a feeling of distress. When she stands up, the usual increase in venous pressure found in the legs is exaggerated because the pressure of serum proteins in the circulation is low, and therefore she has a greater tendency to lose fluid with the tissues. Her blood volume drops down to a critical level, and it is no longer possible to maintain blood pressure despite the contraction of the blood vessels.

I am not so sure about this patient's renal function. The low blood volume, I think, makes it pretty difficult to tell, because it is obvious that with the low blood volume she would have a tendency to have glomeruler filtration. So I think that she may have a pre-renal failure but we cannot say this with certainty. Strangely, the nephrotic patient goes to a complete cure better than any of the other chronic glomerulonephritis patient.

Dr. Mudrick has shown you that the albumin given is not reflected by a rise of serum protein. One serum protein value immediately after giving a hundred grams of protein is lower than one at the onset. This simply means that part of the protein is being used in expanding the blood volume. But it looks also as though the protein were going somewhere else, and it is a well known fact that some of these patients go into a positive nitrogen balance for a long time. Some of the protein can undoubtedly go into the tissue stores. One way of looking at it, and much of the experimental work makes this look somewhat correct, is that you have in the body tissues a large reservoir with the serum albumin reflecting the body proteins. Therefore when you put albumin into the circulation it is necessary to raise this whole large reservoir.

Dr. Bennett mentioned to you the patient's failure to eat. When she gets the albumin, she begins to eat much better. But I doubt if she ever gets up to her true caloric needs. Each one gram of albumin is equivalent to four calories, and that albumin, if she isn't getting sufficient calories, is eligible for caloric needs. It is food, so it can be burned to furnish these calories. If one thinks of expense in terms of what one is paying for calories, it really gets very high. Fifty grams a day furnished 200 calories at a cost of $125. I think that shows you why albumin in a certain sense is financially impractical. However, should it save the patient's life, it is highly logical.

I might go back to say a few words about the measurement of blood volume. We are fortunate here in using the carbon monoxide method, and it has an advantage over the dye (Evans Blue) method, particularly in a case like this. In the dye method you introduce the dye into the blood and measure the solution, and it has a fault in that if the serum is cloudy it makes the reading difficult. Secondly, a patient like this almost invariably clears the dye into the urine because it is attached to the protein. Therefore, you get an apparently larger blood volume than the actual blood volume.

Dr. Stacy R. Mettier:‡ Does the urine output increase after albumin?

Dr. Hopper: It goes up distinctly after giving the albumin.

Dr. William J. Kerr:§ It rises sharply immediately after the albumin but falls off by the next day, correlating with changes in blood volume.

Dr. Hopper: Thorn has maintained patients like this for as long as 30 days. That costs about $3,700. No direct benefit was observed as far as the disease process in the kidney is concerned. However, his patients did get along quite well, during the treatment period had good diuresis, and after the period of therapy were able to maintain a lower weight than previously. The patients had gone into a positive nitrogen balance, which is good. In other words, they stored some nitrogen which was going to carry them along in the future.

Dr. T. L. Althausen:† Dr. Hopper, one time Epstein gave patients with nephritis large doses of thyroid substance for which he claimed beneficial results. It was mentioned that this patient had milky serum with cholesterol count of 444. It seems to me that is a little low to impart a milky quality to the serum.

Dr. Hopper: The cholesterol is elevated in this patient, but in addition neutral fats, fatty acids and

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§ Professor of Medicine, University of California Medical School.

† Professor of Medicine, University of California Medical School.

phospholipids may be increased and impart a milky appearance to the serum. These patients nearly always have a low basal rate, usually around 30 per cent minus, but they tend to respond as a rule very, very poorly to the administration of thyroid. In some of Epstein's cases, they were given as high as a whole gram per day of thyroid without response. The basal rate didn't go up. One possible explanation of that is that they have such a terrific proteinuria that the particular metabolically active protein is just carried right out. It is obvious that with only 77 grams total circulating protein in the blood, and losing 25 grams a day, every three days all that protein is going to be cleared out and must be replaced by new protein. I do think thyroid is always worth trying in any case. On the other hand, there is another consideration, namely, if you actually increase the metabolic rate of these patients you might tax them in other ways, especially from the point of view of the kidney.

QUESTION: Doctor Hopper, what would be your reaction to the use of gelatine in this patient?

DR. HOPPER: I think that is a pertinent question. Gelatine is undoubtedly much cheaper for one thing. It suffers from the same difficulties that albumin suffers, being cleared out very rapidly. The changes in plasma volume are very transient, lasting only a matter of hours. We have been able to obtain gelatine free of sodium which is of prime importance. Of course gelatine is less physiological than human albumin.

DR. KERR: What do testosterone and some of the other sex hormones do in a patient of this type? Do they tend to cause retention of nitrogen in patients such as this?

DR. HOPPER: Well, testosterone deserves a trial. We have given it to one patient without a spectacular effect. It should be done, and the effect on the total circulating protein should be studied.

I do think, however, along with the general treatment of the patient one should always include a consideration of the kidney lesion, because you may prolong life in many instances if you can keep the patient from going into uremia.

QUESTION: Why couldn't you give whole blood transfusions to build serum proteins?

DR. HOPPER: In this patient you would run into trouble because the patient already has a hemoglobin between 117 per cent and 105 per cent. You would be likely to build up the cells and you might produce vascular accidents, perhaps thrombosis, due to overthick blood.

QUESTION: How does the use of albumin compare with the use of plasma?

DR. HOPPER: They are both costly. I guess the albumin is a little bit more expensive. One trouble is the salt. One would be in difficulty very quickly unless one obtained salt free plasma.

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NOTICES AND REPORTS

Council Meeting Minutes

Tentative Draft: Minutes of the 346th Meeting of the Council of the California Medical Association, Los Angeles, September 20-21, 1947.

The meeting was called to order by Chairman Bruck in Conference Room No. 5 of the Biltmore Hotel at 10:10 a.m., Saturday, September 20, 1947.

1. *Roll Call:*

Present were President Cline, President-Elect Askey, Speaker Alesen, Vice-Speaker Charnock, Councilors Bruck, Shipman, Ball, Crane, Kneeshaw, Lum, MacDonald, Green, Cherry, MacLean, Hoffman and Thompson, Secretary Garland and Editor Wilbur. A quorum was declared present and acting.

Present by invitation were Legal Counsel Hassard, Executive Secretary Hunton, Assistant Executive Secretary Wheeler, Legislative Chairman Dr. D. H. Murray, Mr. Rollen Waterson, Executive Secretary of the Alameda County Medical Association, Public Relations Counsel Clem Whitaker, and Mr. Ed Clancy, associated with Mr. Whitaker.

2. *Approval of Minutes:*

(a) Minutes of the 345th Council meeting, held June 21-22, 1947, were approved.

(b) Minutes of the 204th Executive Committee meeting, held August 6, 1947, were approved.

3. *Membership:*

(a) A report of membership as of September 19, 1947, showing 8,739 active members, was received.

(b) Upon motion duly made and seconded, 126 members whose 1947 dues had been received since June 22, 1947, were reinstated to active membership.

(c) Upon motion duly made and seconded, Dr. Jack K. Ransom of Stanislaus County was elected to retired membership.

(d) Upon motion duly made and seconded, Drs. L. P. Fleming of Fresno County and R. G. Frey of Tehama County were elected to Life Membership. Two other applicants for Life Membership, Drs. W. J. Avery and L. R. Willson of Fresno County, were elected as life members provided they comply with the dues requirements for such membership.

(e) Upon the request of the component county medical societies, it was regularly moved and seconded and voted to elect Drs. Lewis G. Jacobs, James W. Moreland and Robert J. Parsons of Alameda County and Dr. J. B. Askew of San Diego County to Associate Membership.

4. *Financial:*

(a) A report showing cash balances as of September 10, 1947, was received and ordered filed.

(b) A report showing the Association Balance Sheet as of August 31, 1947, was received and ordered filed. A report of income and expenditures for August and for the first two months of the fiscal year was previously mailed to the Council.

5. *Committee Appointments:*

(a) The Chairman announced the membership of a Committee on Awards, which will be responsible for determining the award winners for scientific exhibits and also for papers of outstanding merit submitted by internes, residents and junior physicians at the Annual Session. This committee consists of Drs. Edward B. Dewey of Pasadena, Emile Holman of San Francisco, E. Richmond Ware of Los Angeles and Wm. J. Kerr of San Francisco. This committee has been authorized to appoint a secret committee of judges if it wishes.

(b) The Chairman announced the membership of a Committee on Councilor Districts, as authorized by the 1947 House of Delegates. This committee consists of Dr. G. Dan Delprat of San Francisco, chairman; William N. Makaroff of Guerneville, Orrin C. Cook of Sacramento, T. C. Lawson of Oakland, Ruth A. Frary of Watsonville, Alfred B. Wilcox of Santa Barbara, F. R. Guido of Visalia, George Caldwell of Hollywood and A. E. Moore of San Diego.

The Chairman read a letter which had been sent by the chairman of this committee to the members, outlining the objectives of the committee, detailing the present status of Councilor Districts and requesting suggestions for committee consideration.

(c) The Chairman announced the membership of a Committee on Constitution and By-Laws as authorized by the 1947 House of Delegates. This committee consists of one member each from the nine Councilor Districts and one member each from the

seven largest component county medical societies. The Council selected from the nine Councilor Districts Drs. Dudley Saeltzer of Sacramento, George I. Dawson of Napa, J. Marion Read of San Francisco, Leslie B. Magoon of San Jose, J. E. Young of Fresno, A. A. Morrison of Ventura, Paul A. Quaintance of Los Angeles, Sam J. McClendon of San Diego and Lester B. Lawrence of Oakland. Their respective county societies selected Drs. A. E. Varden of San Bernardino, John C. Wilson of San Jose, Bryant R. Simpson of San Diego, Orrin C. Cook of Sacramento, William G. Donald of Oakland, G. Dan Delprat of San Francisco and Edmund T. Remmen of Los Angeles.

The Chairman asked suggestions for a temporary chairman for this committee and on nominations duly received, it was regularly moved, seconded and voted that Sam J. McClendon of San Diego be elected temporary chairman.

6. *American Medical Association:*

Dr. Dwight H. Murray reported on several matters which had recently come before the Board of Trustees of the American Medical Association, of which he is a member.

One item concerned the need of providing some health inspection, particularly for tuberculosis, of immigrants coming to the U. S. from other countries where health standards and tuberculosis control are not on the American level. Dr. Murray suggested that the Association take some action to urge that proper examinations be required for immigrants. On motion duly made and seconded, the Council unanimously voted that an appropriate resolution be prepared for introduction into the A.M.A. House of Delegates by the California delegation.

Dr. Murray also discussed the advisability of providing for the affiliation of medical students and hospital junior staff members with organized medical groups. It was pointed out that this subject had come before the C.M.A. 1947 House of Delegates. On motion duly made and seconded, it was voted that a committee of six members should be appointed to consider this question and report to the next C.M.A. Annual Session on recommended means to bring about the affiliation of medical students and junior hospital staff physicians with the Association, the President of the Association to serve as chairman of the committee and the other five members to be selected because of their knowledge of the operation of the five medical schools of the State.

7. *Prepayment Medical Care Plans:*

Dr. Green discussed a recent report offered by Dr. Sidney Garfield and associates to establish a physician in Petaluma if the C.I.O. in that area would agree to secure medical care contracts from 200 of its members and their families. He stated this represented a spreading out of the "Permanente Foundation" and stated his belief that the word "Foundation" in the title of this organization might be misleading to the public. Dr. Cherry commented on the operations of the "Permanente plan" in the Fontana area and Mr. Whitaker stated that the Health Service System of San Francisco, from which more than 300 of the present 985 panel physicians are about to resign, has reported been dealing with "Permanente" to provide service in case the private physicians' resignations become effective.

After considerable discussion, it was regularly moved, seconded and voted that the following resolution be adopted:

WHEREAS, The Council of the California Medical Association on August 12, 1945, adopted basic "Principles on Health Insurance" which were published in *California and Western Medicine* at page 61* of the August, 1945, issue, and

* It is in the public interest that the California Medical Association, representing the doctors of medicine practicing their profession in the State of California, publicly make known the principles which should form the basis of any health insurance program, and from which there should be no material deviation if the public welfare is to be properly and adequately protected. The public health and good medical practice are inextricably interwoven and interdependent.

This statement is made with the understanding that the public is entitled to the best possible quality of medical service and access thereto. The medical profession must be in a position to render such service if the best interests of the public are to be served.

The manifold and constant advances in the science and practice of medicine are put to public benefit only when they can be utilized by an alert and progressive medical profession. The public is entitled to profit by all scientific advances and the public welfare demands that the medical profession have complete scientific freedom in their application.

PRINCIPLES

Any sound health insurance program should fulfill each of the following basic points:

1. It is of primary importance that the people should be enabled to provide for the costs of illness on a regular budget basis during periods of good health and stable earning power, so that they may have a medical-economic security. It is vital, however, that the distribution of costs should be undertaken in a manner which will still guarantee the finest possible medical care and which will prevent any deterioration in the quality of medical service.
2. To serve the ultimate public interest any health insurance plan must:
 a. Be voluntary and not compulsory in nature,
 b. Retain individual initiative in medical practice, so that the incentive for further advance in scientific medicine may continue,
 c. Fully protect the freedom of choice, both of the patient in choosing a physician and of the physician in choosing his community, type of practice and professional procedures,
 d. Offer medical care in cooperation with allied services against serious illness or injury,
 e. Offer participation at a cost within the means of all employed persons and income-receiving families, and
 f. Provide a fair reward to those rendering the service which will give continued stimulus to scientific medical development and sound medical practice.
3. The function of state government should be to encourage voluntary health insurance programs but not regiment the patient and the medical profession or operate compulsory health insurance plans established by political means; to further this function, the state should cooperate with medical and allied professional groups to provide the availability of medical and associated care through acceptable prepayment plans in areas where a shortage of medical and hospital facilities exists.
4. It is in the public interest that the human factor in medical care be thoroughly recognized; the sanctity of the patient-physician relationship must be maintained and the method of providing medical care must not become enmeshed in bureaucratic red tape and a system of tickets, coupons, questionnaires and other political controls and delays.
5. It is essential for the public welfare that there exist in each state a complete inventory of all medical resources and facilities. It is in the public interest that a coherent and comprehensive educational program be undertaken, preferably by responsible authorities and the medical profession in a coordinated effort, to advise all the people of the state on the facilities and services available to them in the event of need and to encourage sound public health measures for the prevention of both accidental and non-accidental illnesses and injuries.
6. There should be a coordinated program on the part of all groups concerned with this problem, directed to the extension of voluntary health insurance plans, so that our people may systematically provide for their health care on a budget basis.

WHEREAS, Said principles on health insurance specify the conditions which any health insurance plan, public or private, should fully meet, and

WHEREAS, It is the sense of the Council of the California Medical Association that members of the Association ought not to participate in health insurance plans unless they fully comply with these principles on health insurance, and

WHEREAS, Section 2(d) of Chapter 2 of the By-Laws of the California Medical Association provide that any active member of a component county society shall be subject to disciplinary proceedings in the event of violation of any of the By-Laws of the California Medical Association or any of the principles of medical ethics promulgated from time to time by the California Medical Association, and

WHEREAS, It is in the best interests of the California Medical Association, its component county societies and its members that the principles on health insurance heretofore adopted be incorporated in the By-Laws of the California Medical Association as one of the principles of medical ethics of the Association, now therefore be it

Resolved, That the Council shall recommend to the House of Delegates at the next regular or special session of the House of Delegates that the principles on health insurance heretofore adopted by the Council be approved and ratified by the House of Delegates, and that all component county societies and members be notified of such action.

8. *California Tuberculosis and Health Association:*

Dr. Askey, chairman of a C.M.A. committee to meet with a committee from the California Tuberculosis and Health Association, reported on a meeting held September 14, 1947, by the joint committee, at which progress was made in removing misunderstandings between the two organizations. On motion by Shipman, seconded by Cherry, it was voted that this committee be continued and that cooperation with the California Tuberculosis and Health Association be sought.

9. *1948 Annual Session:*

Dr. Garland reported on a meeting of the Committee on Scientific Work, at which general plans for the 1948 Annual Session were laid. The committee contemplates a meeting in San Francisco, headquarters to be in the Hotel St. Francis, with meetings in that hotel, the Sir Francis Drake Hotel and the Geary and Curran theaters.

On motion by Askey, seconded by Green, it was voted that the Committee on Scientific Work be empowered to arrange for five guest speakers at the Annual Session, one guest to be invited by the President, one by the Section on General Medicine, one by the Section on General Surgery and two each year by the other specialty sections in alphabetical rotation.

On motion by Cline, seconded by Green, it was unanimously voted to extend to Dr. George Lull, Secretary and General Manager of the American Medical Association, an invitation to appear as a guest speaker on the 1948 Annual Session program.

10. *Recess:*

At this point, 4:00 p.m., it was voted to recess until 9:30 a.m., Sunday, September 21, 1947.

11. *Reconvention:*

The meeting reconvened at 9:40 a.m., Sunday, September 21, 1947. On roll call, the Officers and Councilors reported present on September 20 were recorded present and a quorum was declared present and acting. Also present by invitation were Dr. Wilton L. Halverson, State Director of Public Health, Dr. Lowell S. Goin and Dr. Donald Cass, representing the Board of Trustees of California Physicians' Service, and Mr. E. R. Paolini, auditor of C.P.S.

12. *Committee on Postgraduate Activities:*

Dr. Garland reported on a meeting of the Committee on Postgraduate Activities and outlined several proposals the committee wished the Council to consider for the extension of postgraduate activities throughout the rural areas of the State. After discussion of the various proposals, it was moved by MacDonald, seconded by Hoffman and voted that the Committee on Postgraduate Activities be empowered to secure the services of a physician on a part-time or full-time basis at a salary of $6,000 to $12,000 annually, who would coordinate existing postgraduate work, maintain up-to-date information in a special page of the Journal and arrange for suitable postgraduate courses in areas outside the three metropolitan centers of the State. This physician would work under the direction of the committee, through the Association office, and would be selected and his compensation determined through the Executive Committee.

13. *Committee on Medical Economics:*

Dr. MacLean reported on progress by the Committee on Medical Economics in studying the problem of relationships between individual physicians and their patients. The committee has proposed that a thorough statistical study be made of cases of ill feeling which have arisen in various counties and have called for handling by the Bureau of Medical Economics. This study would cover cases in Alameda, San Francisco and Santa Clara counties and would be used as the basis for determining a program to improve the individual relationships between doctors and their patients. This survey would be started under the initial appropriation of $2,500 made by the Council for the work of the committee but Dr. MacLean stated that the completion of the work might require an additional $2,500 because of the personnel needed. On motion by Cline, seconded by Hoffman, it was voted that an additional $2,500 be authorized for this survey, if needed.

14. *Advisory Planning Committee:*

Mr. Hunton, chairman, reported on a meeting of the Advisory Planning Committee with Dr. MacLean,

chairman of the Committee on Medical Economics, at which the Advisory Planning Committee had reviewed the proposed survey plan of Dr. MacLean's committee and had voted unanimously to recommend to the Council that it be adopted. The Advisory Planning Committee had also voted to recommend that a section on medical economics be established, under the direction of the Committee on Medical Economics, to hold one or more meetings at each annual session for the discussion of business, economics and public relations problems involved in the practice of medicine. Inasmuch as the Committee on Scientific Work was already planning a medical economics meeting for the Annual Session, no action was taken on this proposal.

15. *C.P.S. Fee Schedule Committee:*

Dr. Cline reported that Dr. W. L. Bender, chairman of a fee schedule committee established by the Council, was disturbed because the committee had not been given a report to date on any action taken on the recommendations of the committee, which were forwarded to the C.M.A. and through the Council to the Trustees of C.P.S. Mr. Hassard reported that action had been taken on some of the committee's recommendations and was under consideration on others. On motion by Cline, seconded by MacDonald, it was voted that the Council request the Board of Trustees of C.P.S. to furnish Dr. Bender and his committee with a report on the recommendations made by his committee and any action taken or contemplated on them.

16. *Palo Alto Clinic:*

The chairman read several letters which had passed between physicians in Santa Clara County and the Association office and legal counsel in regard to the effectiveness of working agreements made between officers of Stanford University and the Santa Clara County Medical Society and the C.M.A. for student health service at Stanford. Some physicians in Palo Alto expressed the belief that the spirit of these agreements was not being lived up to and that there should be a closer contact between the C.M.A. and Stanford University in this regard. On motion by MacDonald, seconded by Alesen, it was voted that the Council Chairman should request Dr. Donald Tresidder, President of Stanford University, to supply the Council with copies of all material bearing on the student health service, including publicity releases, which is to be given to students enrolling in the University.

17. *California Physicians' Service:*

Dr. Lowell S. Goin, President of the Trustees of California Physicians' Service, reported that the beneficiary membership as of August 31, 1947, was more than 503,000. The emphasis in enrollments is now on increasing the percentage enrollment in existing groups rather than gaining new groups. He also reported on a Santa Clara County meeting of August 21, at which C.P.S. representatives joined with C.M.A. officers and C.M.A. public relations counsel in explaining C.P.S. and C.M.A. policies in regard to prepayment plans and public relations. Dr. Goin also reported that Dr. Albert M. Meads of Oakland had been appointed a Trustee of C.P.S. to succeed Dr. Donald D. Lum, resigned. He also stated that C.P.S. had recovered between $80,000 and $90,000 from the Veterans' Administration for administrative expenses beyond the 7 per cent originally calculated in the Veterans' Administration contract.

Dr. Goin stated that the Board of Trustees of C.P.S. had voted to request the Council to continue a C.P.S. fee schedule committee.

Dr. Donald Cass reported on the formation of a permanent joint operation committee by C.P.S. and Hospital Service of Southern California. This committee has held one meeting and Dr. Cass stated the outlook for smooth joint operations by and between the two organizations was very good.

Mr. Paolini gave a report on the financial status of C.P.S. and estimated that by December a decided improvement in operating results will become apparent.

18. *New Mexico Physicians' Service:*

Mr. Hunton reported on his visit to New Mexico Physicians' Service in conformity with instructions given at the 345th Council meeting. He conferred with Dr. John Conway, President of New Mexico Physicians' Service, Mr. Louis J. LaGrave, Executive Director of New Mexico Physicians' Service, and Mr. Charles Johnson, President of the Board of Trustees of Hospital Service, Inc., the Blue Cross program in New Mexico.

The difficulties between New Mexico Physicians' Service and Hospital Service are traceable to personality clashes, resulting in refusals to hold joint meetings, whispering campaigns against individuals and other evidences of non-cooperation. Hospital Service, Inc., had attained a membership of about 3,000 in its own operations prior to formation of New Mexico Physicians' Service. In its joint operations with New Mexico Physicians' Service since April 1, 1946, this membership has risen to more than 10,000 and the enrollment of N.M.P.S. has reached about 8,000.

New Mexico Physicians' Service operated at a loss of $7,342 for the final nine months of 1946, its first fiscal period, and for the first seven months of 1947 has shown an operating profit of $4,442, making a deficit of $2,900 as of July 31, 1947. Of the first seven months of 1947, five have shown an operating profit of from $403 to $2,960 and two have shown losses of $735 and $751. As of July 31, 1947, N.M.P.S. showed current assets of $18,785 and current liabilities of $2,587. On the same date the balance sheet shows cash advances of $11,250 from the California Medical Association and $8,900 from physicians in New Mexico. All physicians' claims for services were paid up to date and a liquidation on that date would have permitted the payment of 80 per cent of the funds advanced by the C.M.A. and by New Mexico physicians.

New Mexico Physicians' Service has been attempting to attain a straight joint operating agreement with Hospital Service, Inc., under the direction of a single executive but has not received much encouragement from Hospital Service toward that end. At present it is reported that Hospital Service, Inc., is discussing with Occidental Life Insurance Company the possibility of that company's writing surgical or medical indemnification insurance in conjunction with Hospital Service's hospitalization coverage; at the same time, N.M.P.S. is considering the activation of a non-profit corporation which it has already formed for the purpose of writing hospitalization coverage if that course is deemed advisable. N.M.P.S. feels that its own hospitalization program would receive the support of all thirty hospitals in the State with the single exception of the Presbyterian Hospital in Albuquerque, which until recent months has supplied seven of its officers or employees as members of a nine-man directorate of Hospital Service, Inc. More recently, N.M.P.S. was requested to name three physicians as members of this board; the physicians have been named but have found that the operations of Hospital Service, Inc., are controlled by a small executive committee which does not include physicians.

Mr. Hunton reported a most cordial feeling toward the C.M.A. by the physicians of New Mexico and a desire on their part to discontinue the monthly loan which the C.M.A. has granted N.M.P.S. No date for discontinuance of the loan has yet been determined but will be at the earliest practicable date.

19. *Industrial Fee Schedule:*

Dr. Donald Cass, Chairman of the Committee on Industrial Practice, reported that the committee has solicited suggestions for revision of the present schedule of fees for industrial accident cases. These suggestions will be collated by the committee and any suggestions by the committee will be brought before the Council.

Dr. Cass also reported on a series of industrial health shows which have been staged in various cities under the supervision of the Council on Industrial Health of the A.M.A. He gave the Council the suggestion from the A.M.A. that a full or part-time physician be appointed to travel throughout the State to stage industrial health exhibits and to appear before service clubs and other civic organizations to promote better industrial health conditions.

20. *California Hospital Survey:*

Dr. Shipman, Council Vice-Chairman, assumed the chair and read a letter from Dr. Lowell S. Goin under date of July 23, 1947, and a letter from Dr. Wilbur Bailey under date of September 11, 1947, both criticizing statements included in a report entitled "Survey of Hospital Facilities in California—Preliminary Report" recently issued by the California State Department of Public Health. The statements criticized concerned the advocacy of hospitals as the desirable location for all diagnostic and therapeutic procedures to take place. On motion by Kneeshaw, seconded by Shipman, it was unanimously voted that the Council go on record as favoring the sentiments expressed in these two letters and forward copies of the Council resolution to the members of the Governor's Advisory Council on Hospital Facilities, which was responsible for the report.

Dr. Wilton L. Halverson, State Director of Public Health, stated that there were doubtless some errors contained in this preliminary report which would not be contained in the final report. He also stated that when and if hospitals are located in rural areas under a coordinated hospital construction program it will be the policy of the Department of Health to encourage physicians to locate their offices within or adjoining the hospitals.

21. *State Department of Public Health:*

Dr. Wilton L. Halverson, State Director of Public Health, reported on the establishment of a field training program for workers in the field of poliomyelitis and on other projects of his department. These were reported in the minutes of the 204th meeting of the Executive Committee, approved by this meeting.

22. *Blood Banks:*

The chairman digested actions taken to date in working toward a coordinated program of blood banks in California and reported on the agreement of the C.M.A., the State Department of Public Health and others as early as November, 1946, to work for the establishment of community blood banks in selected areas throughout the State. He also commented on some activities of the American Red Cross in its newly-developed national plan of blood banks. Dr. Thompson and Dr. Halverson also referred to Red Cross activities in this field and there was general discussion.

On motion by MacDonald, seconded by Askey, the following resolution was unanimously adopted:

WHEREAS, The dangers, technicalities, and complexities involved in the procurement, processing and transfusion of human blood such as the determination of the Rh factor, the danger of transferring virus diseases and homologous serum jaundice and the possible spread of malaria, syphilis and various other serious infectious diseases, etc., have been rapidly increasing, therefore be it

Resolved, That the following basic principles form the long term policy of the California Medical Association with respect to the transfusion of blood and the establishment of blood banks:

1. That all blood banks be owned and/or directly controlled by county medical societies.

2. That regional blood banks be established in general conformity with the statewide plan outlined by the joint committee of the California Medical Association, the California State Board of Health and others, as set forth in a report entitled "Report on Blood Bank Services in California" submitted by the State Department of Public Health to the Governor and the Legislature in January, 1947.

3. That the control of standards in these banks be under the supervision of the State Board of Health

to the extent and as set forth in S.B. 1257, introduced in the 1947 Legislature as finally amended on June 5, 1947.

4. That these banks operate on a non-profit principle with charges for blood placed at actual cost.

5. That the cooperation and assistance of civic, fraternal, religious, charitable, labor and business organizations be sought in order to stimulate interest in and donors for such blood banks.

6. That the California Medical Association stands ready to assist county medical societies or groups of such societies in implementing the policies outlined above.

On motion by Cline, seconded by MacDonald, the following resolution was unanimously adopted:

Resolved, That the Council of the California Medical Association express to the American Red Cross its appreciation of the interest which the American Red Cross has manifested in the furnishing of blood and blood fractions to the public of the State of California, and be it further

Resolved, That the Council of the California Medical Association express its opinion that the proper function of the American Red Cross in the provision of blood and blood fractions is and should be limited to the procurement of donors and the transportation of blood, and be it further

Resolved, That it is not the proper function of the American Red Cross to establish and maintain facilities for the processing and provision of blood or blood fractions, and be it further

Resolved, That copies of the resolutions be forwarded at once to all component county societies and to such representatives of the American Red Cross as are interested, to each state society and to the American Medical Association.

23. *Alternate Delegate to American Medical Association:*

The Chairman called attention to the fact that Dr. Ralph Eusden had been elected a Delegate to the American Medical Association at the C.M.A. 1947 Annual Session and that his election had left a vacancy for the position he had previously held as Alternate to Dr. Donald Cass, Delegate. Dr. Ewing L. Turner of Los Angeles was nominated to fill this vacancy until the next meeting of the C.M.A. House of Delegates and was unanimously elected.

24. *Public Policy and Legislation:*

(a) Mr. Whitaker reported a highly satisfactory response to the initial issue of *C.M.A. Public Relations News* which was authorized at an earlier meeting. He also stated that the public response to the radio program on its new 30-minute Sunday afternoon hour was greatly improved over the former 15-minute evening program. Mr. Whitaker also reported that more than 800 of the 985 San Francisco physicians serving on the panel of the Health Service System of California had signed resignations from the service, to become effective when and if a committee of the San Francisco County Medical Society so decides.

Mr. Whitaker also reported on the cordial reception given the C.M.A. radio program "California Caravan" by the State Congress of Parent-Teacher Associations and suggested that the Association express its thanks for this support. It was regularly moved, seconded and voted that the President write a letter of appreciation.

(b) Dr. Murray reported on the Washington legislative situation and suggested that all California physicians who are to appear before Congressional committees should clear their appearances and testimony through the Washington office of The United Public Health League. This would remove any chance of ambiguity or unrelated efforts in any movement by American medicine as a whole.

Dr. Murray also reported a request which had been received from Hon. Alfred W. Robertson, chairman of a joint legislative committee to study revision of the California State Constitution, asking that a representative of the C.M.A. be named to an advisory committee. On motion duly made and seconded, it was voted that Dr. John W. Cline be named to this appointment.

26. *California State Nurses Association:*

A request from the California State Nurses Association was presented, asking that the C.M.A. act to encourage the issuance of standing orders for industrial plant nurses by industrial physicians. On motion duly made and seconded, it was voted to refer this matter to a committee headed by Dr. Peter Blong of Alhambra, which is already in contact with a liaison committee from the California Nurses Association.

27. *Agenda of Council Meetings:*

On motion by Lum, seconded by Green, it was voted that the agenda of Council meetings be prepared and mailed to all Councilors at least a week in advance of the meeting date, together with copies of letters or other items which merit advance study by the Councilors.

28. *Time and Place of Next Meeting:*

It was agreed to hold the next Council meeting in San Francisco on Saturday and Sunday, December 20 and 21, 1947.

29. *Adjournment:*

There being no further business to come before the meeting, it was voted to adjourn at 4:15 p.m.

Executive Committee Minutes*

The 204th meeting of the Executive Committee of the California Medical Association was called to order by Chairman Sidney J. Shipman at the Family Club, San Francisco, August 6 at 7:15 p. m.

1. *Roll Call:*

Present were Chairman Shipman, President John

* These minutes and the actions taken by the Executive Committee will be subject to approval by the Council at its next meeting.

W. Cline, Council Chairman Edwin L. Bruck, Editor Dwight L. Wilbur (ex-officio) and, by invitation, Doctor Wilton L. Halverson, State Director of Public Health, and Mr. John Hunton, Executive Secretary.

Absent: President-Elect E. Vincent Askey, Speaker L. A. Alesen and Secretary L. Henry Garland (ex-officio).

2. *State Department of Health:*

(a) Doctor Halverson presented an outline of a field training program of the State Department of Health, to be carried on under a four-year grant of $104,500 from the W. K. Kellogg funds. This program would train health officers, public health nurses, sanitariums and other technicians and would aim at increasing the supply of trained personnel available for public health work. The Kellogg grant would start at $55,500 the first year, decrease to $32,000 the second year, to $12,000 the third year and $5,000 the fourth year. This grant would be for the purpose of providing a demonstration of the adequacy of a field training program, with the thought that such a program, if successful, could be financed from other funds for future years.

Doctor Halverson suggested that representatives of the California Medical Association might sit on a committee to direct this program.

(b) Doctor Halverson discussed the Crippled Children's program and presented tables showing the cases treated, an outline of the law and other material. It was agreed a wider distribution of professional personnel serving the program should be obtained if possible.

(c) Doctor Halverson discussed the Red Cross blood bank program in terms of the California situation. He was advised that the Council had voted that local county medical society approval should be secured where Red Cross blood banks were to be established.

(d) Doctor Halverson discussed proposed changes in the regulations governing clinical laboratories, these amendments to be discussed by the State Board of Health at a coming meeting. The intent of the proposed changes would be to require more exact education prerequisites for the granting of licenses to technologists.

3. *Contract Practice:*

Doctor Shipman presented a draft of a resolution which would signify the intent of the C.M.A. Council not to approve any prepayment medical care plans which might be formed by more than one physician. It was agreed that this subject should be further discussed by the Council.

4. *Chamber of Commerce:*

Mr. Hunton presented the request of the California State Chamber of Commerce for continued support and on motion duly made and seconded, it was voted that the annual subscription of $250 to the California State Chamber of Commerce should be continued this year.

5. *Adjournment.*

C.M.A. Annual Meeting April 11-14, San Francisco

The 1948 Annual Meeting of the California Medical Association will be held in San Francisco, April 11 to April 14, 1948, inclusive (Sunday through Wednesday). The Committee on Scientific Work anticipates an excellent attendance, especially in view of the fact that improved arrangements are being made for meeting places. It is planned to use the St. Francis Hotel, the Sir Francis Drake, the Curran Theatre, and the Geary Theatre. These four buildings are located within a block of each other and should provide excellent facilities.

INFORMATION FOR AUTHORS, MEMBERS OF SYMPOSIA AND PANEL DISCUSSIONS

The following information for authors and discussants is reprinted for the edification of all members:

1. All members taking part in such programs should have a manuscript ready for presentation to the Section Secretary. The manuscript does not need to be followed verbatim at the meeting itself, but must be available for consideration by the Editor of CALIFORNIA MEDICINE for publication in that Journal.

2. All manuscripts become the property of the California Medical Association until officially released, upon written request of the author, for publication elsewhere.

3. Members are reminded that each lantern slide takes approximately one minute for presentation and that no lantern slides should have more than about six lines of text on them. Lantern slides containing voluminous chart or statistical data are largely a waste of time. The interest of the audience is better held by succinct presentation of the principal points.

4. Authors must inform Section Secretaries in advance of the meeting of any special equipment needed for presentation of papers, other than standard lantern slides (3¼" x 4" glass slides).

5. Extra time is not allowed for the presentation of slides, movies or other material, however remarkable, except by arrangement at least three months prior to the annual meeting.

6. Authors submitting charts or pictures for use with their articles when published are reminded of the rule limiting to $25 the amount which CALIFORNIA MEDICINE may spend for engravings to reproduce the illustrations. (Twenty-five dollars will buy approximately a half page of engravings for shaded drawings or photographs and three-quarters of a page of absolute black and white engravings. When an author wishes to include more engravings than can be paid for by CALIFORNIA MEDICINE under its $25 limitation, the usual practice is to bill him for the amount by which the cost of engravings exceeds the limit.)

INFORMATION FOR SECTION SECRETARIES

The following information is being reprinted for the benefit of all Section Secretaries:

1. All papers read at the Annual Meeting must be ready for handing to the Section Secretary at that meeting.

2. Speakers should be urged to prepare a condensed version of their papers for verbal presentation (in addition to the regular copy for submission to the Section Secretaries for the Editor of CALIFORNIA MEDICINE).

3. All papers must be preceded by an abstract not to exceed 50 words, mailed to the Association office, 450 Sutter Street, San Francisco, by February 1.

4. Papers should be designed for presentation in 15 minutes; the maximum time allowed is 20 minutes. The Section Chairmen should signal speakers at the end of 17 minutes, to indicate that only three minutes remain.

5. Discussions should ordinarily be limited to five minutes; no person may speak twice on a subject except by permission of the meeting; the authors' closing discussions are limited to five minutes.

6. Section Chairmen are requested to notify speakers when their time is reached.

7. Under special circumstances (distinguished authorities, specially invited discussants, members of symposia, etc.), speakers or discussants may be allocated times longer than the above. This must be done by prearrangement, with the allotted time indicated in the program.

8. All papers read at the Annual Meeting are accepted on the condition that they are contributed solely to CALIFORNIA MEDICINE; members desiring to publish their papers elsewhere must make written application to the Editor.

9. A member may not present a paper in each of two succeeding years, or more than one paper at each session. Failure of a member to comply with these rules precludes acceptance of further papers for a period of two years.

10. Section Secretaries *must* inform the Committee on Scientific Work in advance of the Annual Meeting of any special equipment needed for speakers, other than standard size lantern slide projector and screen.

Proposed Amendments To C.M.A. Constitution

First publication of six resolutions to amend the Constitution of the California Medical Association is made herewith. The resolutions were introduced in the House of Delegates at the 1947 annual meeting and are to be voted upon at the 1948 annual meeting.

Proposed constitutional amendment relative to annual assessment of dues

RESOLVED, That Section 1 of Article XI of the Constitution of this Association, California Medical Association, be and the same hereby is amended by adding to said section paragraph headings, by adding to said section a provision that the House of Delegates shall have power to reduce the annual per capita assessment of dues upon certain conditions, and by recasting said section to read as follows: "Section 1.—Annual Assessment of Dues—Other Sources of Funds—Appropriations.

"(a) Annual Dues: Funds shall be raised by equal annual per capita assessment of dues from the active and associate members, assessment of dues upon the associate members to be one half of that upon the active members. The amount of the assessments shall be fixed by the House of Delegates by a majority vote of the members present and voting.

"(b) Waiver of Dues—War Service: Annual dues may be reduced or waived with respect to those members serving in the armed forces of the United States during the whole or any part of any year, and the Council may in its discretion refund in whole or in part from the funds of the Association dues paid in 1940 or in 1941 by or on behalf of active members if such members were at the time actually in the service of the armed forces of the United States.

"(c) Reduction of Dues—Special Cases: The House of Delegates, in fixing the amount of annual dues for any year, may at the same time provide for a reduction in annual dues for such year for those active members of the Association who, during the year, are ill or injured and wholly unable to engage in the practice of medicine or other gainful employment for a period of three or more consecutive months, or for those active members who engage in postgraduate work during the year, or for those active members who graduated from medical school less than five years prior to the first day of January in the year concerned. The House of Delegates, in providing for reduction of dues for any or all of the foregoing classes of active member, may designate the amount of the reduction and the procedure whereby such reduction may be obtained by an active member entitled thereto, or may delegate to the Council the power to fix the amount of the reduction and the procedure for obtaining same.

"(d) Other Sources of Funds—Special Assessments: Funds may also be raised by any of the following methods: I. publications of the Association; II. voluntary contributions; III. bequests, legacies, devises, and gifts; IV. special assessments levied by the House of Delegates; and V. in any other manner approved by the House of Delegates. In the event that the House of Delegates levies any special or other assessment other than the annual assessment of dues, it may, in the resolution levying the assessment, fix and determine the time within which such assessment must be paid, the class or classes of members of the Association upon whom it is levied, and the penalty, if any, including forfeiture or suspension of membership in this Association or the component county medical society, or both, to result from nonpayment thereof within the time prescribed.

"(e) Appropriations of Funds: Any resolution passed and adopted by the House of Delegates at any

regular or special session thereof, which provides for or contemplates the appropriation or expenditures of the sum of more than $1,000, shall not be effective for any purpose unless and until approved by the Council. All appropriations, regardless of amount, approved and made by the Council, shall, if expended, be reported to the House of Delegates at its next annual session, and any unexpended portion of any thereof shall be included in the annual budget.

"(f) Physicians' Benevolence Fund: At least $1.00 out of the annual dues paid by each member of the Association shall be allocated to the Physicians' Benevolence Fund and shall only be used for the purposes as set forth in the By-Laws."

Proposed constitutional amendment relative to life membership

RESOLVED, That Section 1(e) of Article IV of the Constitution of this Association, California Medical Association, be amended to read as follows: "(e) Life Members.

"Qualifications: Life members of the California Medical Association may be elected by the Council on the recommendation of any component county society from those active members thereof who (1) have been active members of this Association continuously for a period of twenty (20) years or more and are more than fifty (50) but less than sixty (60) years of age and have tendered to this Association a life membership fee of one hundred fifty dollars ($150.00) or such other sum as the House of Delegates may from time to time determine; or (2) have been active members of this Association continuously for twenty-five (25) years or more and are more than sixty (60) but less than sixty-five (65) years of age and have tendered to this Association a life membership fee of one hundred dollars ($100.00) or such other sum as the House of Delegates may from time to time determine; or (3) have been active members of this Association continuously for a period of twenty-five (25) years or more, are more than sixty-five (65) but less than seventy (70) years of age and have tendered to this Association a life membership fee of fifty dollars ($50.00) or such other sum as the House of Delegates may from time to time determine; or (4) have been active members of this Association continuously for twenty-five (25) years or more and are more than seventy (70) years of age. Those active members falling within Classification 4 need not be recommended by any component county society but are eligible to life membership on direct application to the Council. The Council may not elect to life membership any active member whose membership has not been continuous or who has ever been censured, suspended or expelled from the American Medical Association, this Association, any state medical association which is a constituent unit of the American Medical Association, or any county medical society which is a component part of this Association or a unit of any other state medical association.

"Obligations and Rights: Life members shall not pay dues and shall not be liable for assessments of any kind or nature. If active membership in good standing is maintained in his component county society, each life member shall have the right to vote, to hold office, and shall have all other rights and privileges of the Association. If active membership in his component county society is not maintained, the rights and privileges of a life member shall be those of a retired member."

Proposed constitutional amendment relative to rights of active members

Subdivision (a) of Section 1 of Article IV of the Constitution of this Association, California Medical Association, is hereby amended by adding to the end of the second paragraph of said subdivision (a) the following: "except that an active member who is gainfully employed or retained, whether compensated by a salary, commission, retainer or other method, by this Association or by any component county society or by any corporation, association or organization controlled by this Association or any component county society, may not hold office in this Association or be a member of the House of Delegates during such time as he is so gainfully employed or retained."

So that the second paragraph of said subdivision (a) of Section 1 of Article IV of the Constitution shall hereafter read as follows: "Rights: An active member shall have the right of suffrage and all other rights and privileges of the Association; except that an active member who is gainfully employed or retained, whether compensated by a salary, commission, retainer or other method, by this Association or by any component county society or by any corporation, association or organization controlled by this Association or any component county society, may not hold office in this Association or be a member of the House of Delegates during such time as he is so gainfully employed or retained."

Proposed amendment to the constitution relative to additional classes of membership

RESOLVED, That Article IV, Section 1 of the Constitution of this Association, California Medical Association, is hereby amended by adding a new subdivision to read as follows:

"(f) Additional Classes of Membership: The House of Delegates may, from time to time, establish special and limited classes of membership in this Association for internes, junior and senior residents, or house officers, practicing in hospitals in this state. In establishing such special membership for internes, junior and senior residents, or house officers, the House of Delegates may determine the qualifications, duration and privileges of such membership. Unless the House of Delegates determines to the contrary, such special members shall not pay dues. The House of Delegates may also from time to time provide for affiliation with the California Medical Association, on an affiliate basis, of undergraduate medical students attending medical schools in this state. Mem-

bership obtained under this subsection (f) shall not carry with it the right to vote or hold office."

Proposed amendment to the constitution relative to inactive members

RESOLVED, That section (f) be added to Article IV to read as follows: (f) Inactive Members: Qualifications—The Council may elect as inactive members, on recommendation of the component county societies concerned, any member in good standing who leaves his practice for a period of six or more months to engage in bona fide postgraduate study, or who leaves his practice by reason of protracted illness and for whom payment of dues would be a hardship. Obligations and Rights—Inactive members shall not pay dues and shall not have the right to vote or to hold office, or if holding an office during the period away from practice shall relinquish that office.

Proposed constitutional amendment relative to dues of members in the armed services

RESOLVED, That the Constitution of the California Medical Association shall be amended: By changing Article XI, Section 1. Paragraph 2, thereof, to read as follows: "Annual dues may be reduced or waived with respect to those members serving in the armed forces of the United States during the whole or any part of any year, and in respect to any member for any cause, upon the recommendation of the Council or Executive Board or body of the respective member's component county medical association or society, and"

In Memoriam

BRUSCO, HENRY DOMINIC. Died in San Francisco, August 24, 1947, age 61. Graduate of the Cooper Medical College, San Francisco, 1908. Licensed in California in 1909. Doctor Brusco was a retired member of the San Francisco County Medical Society and the California Medical Association.

✣

BURROWS, MONTROSE THOMAS. Died in Los Angeles, August 21, 1947, age 62. Graduate of the Johns Hopkins University School of Medicine, Baltimore, Maryland, 1909. Licensed in California in 1924. Doctor Burrows was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

✣

COHN, HERBERT JACOB. Died in San Francisco, August 10, 1947, age 62, of a heart attack. Graduate of the University of California Medical School, Berkeley-San Francisco, 1909. Licensed in California in 1909. Doctor Cohn was a member of the San Francisco County Medical Society, the California Medical Association, and the American Medical Association.

✣

EVANS, GEORGE HERBERT. Died in Berkeley, September 5, 1947, age 78, of a stroke. Graduate of the Wayne University College of Medicine, Detroit, Michigan, 1891. Licensed in California in 1891. Doctor Evans was a retired member of the San Francisco County Medical Society, the California Medical Association, and Affiliate Fellow of the American Medical Association.

✣

FAGAN, SHULER FRANCIS. Died in Los Angeles, September 4, 1947, age 52, of a heart attack. Graduate of the College of Medical Evangelists, Loma Linda-Los Angeles, 1924. Licensed in California in 1924. Doctor Fagan was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

✣

FARROW, EDGAR JAMES. Died in San Diego, September 23, 1947, age 76. Graduate of the University of California Medical School, Berkeley-San Francisco, 1900. Licensed in California in 1900. Doctor Farrow was a member of the San Diego County Medical Society, the California Medical Association, and an Affiliate Fellow of the American Medical Association.

✣

JONES, HARRISON WILLIAM. Died in Bakersfield, August 26, 1947, age 69, of coronary occlusion. Graduate of the University of Michigan Medical School, Ann Arbor, 1904. Licensed in California in 1912. Doctor Jones was a member of the Kern County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

✣

MCCONNELL, ORBAN GAYLE. Killed near Santa Cruz, September 21, 1947, age 57, when his car plunged off a cliff. Graduate of the Washington University School of Medicine, St. Louis, Missouri, 1924. Licensed in California in 1932. Doctor McConnell was a member of the Santa Clara County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

✣

NELSON, ROY FRANK. Died in Oakland, September 5, 1947, age 48. Graduate of Stanford University School of Medicine, Stanford University-San Francisco, 1924. Licensed in California in 1924. Doctor Nelson was a member of the Alameda County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

✣

ROBINSON, SAMUEL. Died in Montecito, September 17, 1947, age 70, of hypertensive and arteriosclerotic heart disease. Graduate of Harvard Medical School, Boston, Massachusetts, 1902. Licensed in California in 1918. Doctor Robinson was a member of the Santa Barbara County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

✣

SAMSON, PIETER. Died in Marysville, August 11, 1947, age 69, of a heart attack. Graduate of Rijks-Universiteit te Leiden Faculteit der Geneeskunde, Netherlands, 1908. Licensed in California in 1920. Doctor Samson was a member of the Yuba-Sutter-Colusa County Medical Society, and the California Medical Association.

✣

SCHUBERT, FELIX HERBERT. Died in Los Angeles, September 11, 1947, age 44. Graduate of the College of Medical Evangelists, Loma Linda-Los Angeles, 1934. Licensed in California in 1935. Doctor Schubert was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

✣

THIBODEAU, JOSEPH ALEXANDER. Died in San Francisco, September 1, 1947, age 70. Graduate of the University of Montreal Faculty of Medicine, Quebec, 1903. Licensed in California in 1910. Doctor Thibodeau was a retired member of the San Francisco County Medical Society, the California Medical Association, and an Affiliate Fellow of the American Medical Association.

George Herbert Evans

George Herbert Evans was born in 1869 at Ontario, Canada. After local schooling he attended the Detroit College of Medicine and Surgery where he received the degree of Doctor of Medicine in 1891. In that same year he commenced practice in San Francisco. He followed his profession continuously in that city until his retirement from active practice in 1933.

Early in his career he became interested in tuberculosis and, while engaged primarily in the private practice of internal medicine, he always took an active part in any tuberculosis work both locally in San Francisco and in California, or with the National Tuberculosis Association as well as international organizations.

He was a delegate to the International Tuberculosis Congress in Paris in 1905. One of the founders of the San Francisco Tuberculosis Association, he was also one of the original organizers of the first voluntary tuberculosis association of the State of California, now known as the California Tuberculosis and Health Association.

While Dr. Evans was helping to organize the fight against tuberculosis in the northern part of the state, Dr. Francis M. Pottenger was doing the same thing for Southern California. Over a period of many years they met at least monthly to discuss these and other affairs of mutual interest. In those days this required tedious train travel over a long week-end.

Dr. Evans was given charge of the so-called "Tuberculosis Colony" instituted by the San Francisco Department of Health in 1906. This marked the first attempt of the municipality at the isolation of the actively tuberculous. It started as a few tents in the old County Hospital grounds at Ingleside. Dr. Evans was very fond of telling the story of his first resident who came to him wondering where he would find the early cases they were hoping for that were considered treatable. Dr. Evans instructed this young physician to "go over to the General Hospital and look through the wards for patients that are coughing, examine their sputum for tubercle bacilli and you will find enough cases to fill all of our few beds." It turned out to be just that way.

In 1908, while President of the California Medical Association, he initiated the movement which resulted in the formation of the Citizen's Health Committee which effected control of the bubonic plague epidemic then current in San Francisco. For many years Dr. Evans was the oldest living Past President of the California Medical Association.

In 1913 he was appointed Assistant Clinical Professor of Medicine at the University of California Medical School to organize a Department of Tuberculosis, and up to 1933 was actively engaged in teaching in that medical school through the wards of the San Francisco Hospital. He always approached the disease tuberculosis as an important part of the field of internal medicine. His carefully prepared lectures to the junior and senior classes were meticulously given, usually at the bedside of a patient. Personal acquaintance with the pioneers of modern methods of tuberculosis treatment and a wide knowledge of existing institutions enabled him to illustrate and drive home a given point with an anecdote of a famous physician or a well known institution, which made his lectures alive and of great interest to the students. He took a real, human interest in the members of his classes and went far out of his way to do the helpful personal things that an older physician can for a neophyte, and also to instill the high ideals of the practice of medicine of which Dr. Evans was a shining personal example.

Dr. George Evans, together with Dr. Philip King Brown, feeling the need of a private institution for the care of their own tuberculosis patients and knowing the necessity of having the many meticulous details in treatment carried out under their personal direction and according to their own ideas, founded Alum Rock Sanatorium in the outskirts of San Jose. This has grown into a non-profit institution of wide service and usefulness and stands as another monument along his professional pathway.

Always active in medical society work, Dr. Evans was an ex-president of the San Francisco County Medical Society, the California Academy of Medicine, the California Tuberculosis Association, and the American Therapeutic Society. He was also a fellow of the American College of Physicians and American Medical Association.

After his retirement in 1933, he spent much of his time abroad in studies on tuberculosis, medical history, and housing. When World War II interrupted this, he continued these studies in and about San Francisco.

One of the fruits of these labors was the section on "The Early History of Tuberculosis in the State of California," for the California Tuberculosis Association, in which much interesting and some previously undisclosed facts were brought to light. During these years of retirement he served as a member of the Committee on Archives of the National Tuberculosis Association.

In April, 1947, jointly with Dr. Francis Pottenger, he was awarded the first of the Annual Medals of the California Tuberculosis and Health Association for outstanding achievement in the field of tuberculosis.

Dr. Evans died quietly from a cerebral hemorrhage on September 5, 1947. Thus ended the full life of an eminent physician, a contemporary of Osler, Koch and that group of pioneer physicians who opened up new eras in the field of tuberculosis.

HAROLD GUYON TRIMBLE, M.D.

NEWS and NOTES

NATIONAL • STATE • COUNTY

ALAMEDA

Dr. Monroe Eaton has resigned as director of the Virus Laboratory of the California State Department of Public Health to become Associate Professor of Bacteriology in the Harvard University Medical School, and **Dr. Jessie M. Bierman** has given up her post as chief of the department's Bureau of Maternal and Child Health to join the faculty of the University of California School of Public Health as Professor of Maternal and Child Health.

LOS ANGELES

The Robert S. Fox **Urological Foundation**, with Dr. Franklin Farman, Dr. W. O. Mendenhall and Lewis A. Myers as trustees, has been established in Whittier. Endowed by Robert S. Fox, of Seattle, the foundation was created for the purpose of stimulating and extending study and research in urology and to develop and improve equipment and medicine. It is proposed that trust funds be used for research, for the education of doctors in urology, and to assist in meeting medical expenses of persons suffering from urological diseases.

Dr. O. Leonard Huddleston, Professor of Physical Medicine at the University of Southern California Medical School, was elected president-elect of the **American Congress of Physical Medicine** at that organization's meeting in Minneapolis early in September.

Dr. Wilbur Bailey, Los Angeles, has been appointed by Governor Earl Warren to the State Board of Medical Examiners, succeeding **Dr. J. R. Walker** of Fresno.

Acting for King Gustav V of Sweden, Walter G. Danielson, Swedish Consul in Los Angeles, last month conferred Sweden's Royal Order of Vasa upon **Dr. Charles F. Nelson** of Beverly Hills for "achievements in the practice of medicine and surgery and his scientific work in the field of medical research."

Dr. Hyman Tavris, former physician-psychiatrist for the state of Illinois and the Veterans Administration, has been **appointed to the teaching staff** of University of California Extension in Los Angeles.

Since 1942 Dr. Tavris has been senior physician and psychiatrist with the California Youth Authority. He is lecturing on "Psychiatric Aspects of Juvenile Delinquency" at the Extension Center, 813 South Hill Street. His lectures are a part of an expanded program of evening courses in psychology being offered in Los Angeles by the adult education division of the state University.

The Estelle Doheny Eye Foundation announces the establishment of an Eye Laboratory located at St. Vincent's Hospital in Los Angeles, designed to provide certain modern ophthalmic facilities badly needed in Southern California.

The immediate functions of the laboratory are:

1. To serve as a pathological laboratory for the diagnosis and registration of pathological specimens, with preparation of gross specimens and microscopic slides for ophthalmologists submitting specimens, and for the building up of a museum of Eye Pathology.

2. To serve as a bacteriological laboratory wherein diagnostic scrapings, smears and cultures can be studied, animal inoculations made, and the sensitivity of organisms to various drugs and antibiotics determined.

3. To provide facilities for fundus, gross, and slit-lamp photography, and to maintain a library of photographs and motion pictures for teaching of ophthalmology.

4. To provide an "Eye Bank" for Southern California, with registry of potential donors and recipients. Donor material will be collected, examined and distributed, and facilities may later be provided for limited instruction in corneal transplant procedures.

5. To distribute and loan certain drugs and equipment that are not otherwise available in the community.

6. To make available certain special equipment for radiation therapy of the eye for use outside the laboratory.

Dr. Alan Woods, Professor of Ophthalmology at Johns Hopkins Medical School, Dr. Cecil O'Brien, Professor of Ophthalmology at University of Iowa Medical School, and Dr. Phillips Thygeson, formerly Professor of Ophthalmology at Columbia University, and now Associate Professor at the University of California, will serve on the Advisory Board. Dr. A. Ray Irvine, Professor of Ophthalmology at the University of Southern California, will act as chairman of the original board. It is contemplated that the Advisory Board will also include prominent business and professional leaders as well as representatives from the eye departments of local hospitals, medical schools and the Eye Section of the Los Angeles County Medical Society.

Dr. Peter Soudakoff, formerly Associate Professor of Ophthalmology at the Peking Union Medical College, will serve as full-time pathologist at the laboratory. As part of the Residency program of the Eye Service of the Los Angeles County General Hospital and certain local Veteran's Hospitals, each resident will spend two or three months at the laboratory. It is anticipated also that a Research Associate, granted a Fellowship in Basic Ophthalmic Research by the Foundation, will be added to the laboratory staff from time to time.

SANTA CLARA

Dr. Robert A. Powers resigned September 1 as head of the radiology department of San Mateo Community Hospital. **Dr. Carl Benninghoven** has been named to fill the vacated post.

Dr. Frederick Proescher has retired as pathologist and bacteriologist of the Santa Clara County Hospital, a position he had held for 23 years. His successor is **Dr. Houghton Gifford** of San Francisco.

SAN DIEGO

Dr. Hubert F. Andrews, who had been San Diego County psychiatrist for 17 years, retired from that position September 14.

Speaking recently before the semi-annual conference of the Western States Better Business Bureau, Robert J. Bauer, general manager of the Los Angeles bureau, said, according to an Associated Press report, that **55 per cent of the doctors in California accept rebates** from medical supply dealers and technicians for sending business their way. Mr. Bauer is quoted as having said: "Oculists and x-ray laboratory technicians are the chief offenders. A majority of the oculists recommend dispensers of glasses to patients in return for a fixed fee. X-ray technicians often kick back as much as 50 per cent to a doctor."

SAN MATEO

The board of directors of the California Division of the American Cancer Society, meeting in San Francisco September 27, appointed **Mrs. W. Parmer Fuller as State Commander.** A resident of San Mateo, Mrs. Fuller as county commander has organized the Cancer Society's work in every town in San Mateo County. At the time she was chosen State Commander, Mrs. Fuller said: "Our work at present is organized in only 19 of the 52 counties of this state. I pledge that within a year **we will have every single county organized."**

GENERAL

The American Academy of General Practice was founded at Atlantic City, June 10, 1947, "to solve certain problems of the general practitioners which have not been met by the existing medical organizations."

Announcement of the formation of the new organization says that "the Academy was founded by a group of general practitioners who have elected to become and to remain general practitioners because of their sincere belief that general practice offers one of the highest and most honored callings, one of the happiest human relation experiences, and one of the most meritorious services of our day. They also believe that general practice is the soundest method of distributing medical care to the American people both from the economic and medical aspects."

The purposes of the Academy as outlined in the Constitution are as follows:

1. To promote and maintain high standards of the general practice of medicine and surgery;
2. To encourage and assist in providing postgraduate study for general practitioners in medicine and surgery, and to encourage and assist practicing physicians and surgeons to participate in such training.
3. To encourage and assist young men and women to prepare, qualify and establish themselves in general practice;
4. To protect the right of the general practitioner to engage in medical and surgical procedures for which he is qualified by training and experience;
5. To advance medical science and private and public health.

The announcement further says that "the membership of the Academy has established the policy of **cooperating fully with the American Medical Association** and the existing medical organizations for the welfare of the medical profession at large. Every general practitioner has a strong obligation to qualify for membership in the local and national academies."

Further information can be obtained from Paul A. Davis, M.D., President, 633 E. Market Street, Akron, Ohio, or S. R. Truman, M.D., Secretary, 1904 Franklin Street, Oakland 12, California.

The **American Academy of Allergy** will hold its annual convention at Hotel Jefferson, St. Louis, Missouri, December 15-17 inclusive. All physicians interested in allergic problems are cordially invited to attend the sessions as guests of the Academy by registering without payment of fee. The program, the scientific and the technical exhibits have been arranged to cover a wide variety of conditions where allergic factors may be important. Papers will be presented dealing with the **latest methods of diagnosis and treatment** as well as the results of investigation and research. Round table conferences will be held on Monday afternoon, December 15, 1947. Advance copies of the program may be obtained by writing to the Chairman on Arrangements, Charles H. Eyermann, M.D., 634 North Grand Boulevard, St. Louis, Missouri.

Fifty-four California physicians, including four in the navy, were accepted into **fellowship by the American College of Surgeons** at its thirty-third convocation, in New York, September 12.

Listed alphabetically, those in civilian practice are: Jack K. Afflerbaugh, Pomona; Nathan Barshop, Los Angeles; William Brock, San Francisco; Truman W. Brophy, Los Angeles; George F. Calvin, Oakland; R. Glenn Craig, San Francisco; Wilber D. Currier, Pasadena; Lawrence L. Davidson, Santa Monica; John W. Dorsey, Long Beach; Howard H. Drake, Los Angeles; David J. Dugan, Oakland; James S. Edwards, Jr., Fort Bragg; Charles W. Gilfillan, Hollywood; Elmer F. Gooel, Beverly Hills; William T. Grant, Los Angeles; David R. Hadden, Berkeley; James T. Harkness, Berkeley; Samuel D. Hart, Beverly Hills; Ernest W. Henderson, Alameda; Lowell R. Hill, Long Beach; Wilfred M. G. Jones, Glendale; Samuel Katz, Los Angeles; J. Harold Kay, Oakland; John M. Kenney, Santa Rosa; Thomas F. Keyes, Marysville; John H. Leary, Downey; Gabe C. Long, San Jose; Michel Loutfallah, Santa Barbara; Ian Macdonald, Los Angeles; Alexis G. Maximov, Santa Rosa; Curtis H. McDonnell, Sacramento; John F. Menke, Sacramento; G. Wendell Olson, Fullerton; Seibert C. Pearson, Long Beach; Max E. Pickworth, San Jose; Edwin B. Plimpton, Los Angeles; Herman I. Riddell, Los Angeles; Carroll A. Russell, Watsonville; Milton V. Sarkisian, Sacramento; Frederic P. Shidler, San Francisco; Arthur E. Smith, Los Angeles; Donald R. Smith, San Francisco; Harold D. Spickerman, Santa Monica; Clarence A. Splithoff, Oakland; David H. Sprong, Jr., Santa Monica; John H. Steelquist, San Diego; Ludwig Strauss, Los Angeles; Warren A. Wilson, Los Angeles; William H. Wright, Santa Monica; Maurice L. Zeff, Berkeley.

The four new Fellows in the navy, with stations in California, are: Commander Lawrence L. Bean, Long Beach; Commander James H. Higgins, San Diego; Captain William M. Russell, Altadena; Captain Clifton A. Young, Mare Island.

INFORMATION

Social Security in Japan

Considerable interest was aroused by the recent announcement that a mission from the Social Security Board was to go to Japan to investigate health care services and to recommend measures for the provision of adequate medical care for the Japanese. Medical men throughout the country were particularly curious about this mission because the personnel of the Social Security Board group was known to be heavily weighted with, if not entirely made up of, vigorous proponents of a system of compulsory health insurance.

Inasmuch as this mission was going to Japan under auspices of the Army, Doctor L. H. Garland, Secretary of the California Medical Association, went straight to the top to ascertain just what the situation was. He wired Hon. Kenneth C. Royall, Secretary of War, as follows:

"KINDLY ADVISE IF SOCIAL SECURITY MISSION OF COMPULSORY HEALTH INSURANCE ADVOCATES IS GOING TO JAPAN UNDER WAR DEPARTMENT ORDERS. IS WAR DEPARTMENT INDIRECTLY SPONSORING COMPULSORY HEALTH INSURANCE FOR JAPAN? PLEASE WIRE REPLY."

Under date of September 9, 1947, Major General Edward F. Witsell, Adjutant General of the Army, replied to Doctor Garland as follows:

"This is in reply to your telegram of 26 August 1947, addressed to the Secretary of War, requesting information in connection with the Social Security Mission which was sent to Japan.

"In the aftermath of the war and the economic stringencies resulting therefrom the Japanese Government has found manifold difficulties in the implementation of its old Health Security Laws. The Japanese Government appealed to the Supreme Commander for the Allied powers for advice and assistance in consolidation and simplification of existing codes in view of the general revision in governmental structure now taking place. Inasmuch as the Supreme Commander for the Allied powers did not possess the expert ability called for, he requested competent personnel for a short period of time to consult with and advise in the premises.

"The purpose of this Mission is to advise with reference to the coordination and application of social security measures which have been in practice in Japan for many years. The scope of the Mission is not designed to initiate any concepts beyond present Japanese laws and will be limited merely to pass upon the adaptability, and practicability of those now existent.

"Nothing new is planned beyond making old practices work. There will be no effort or thought on the part of the United States Government services to inject themselves into the matter nor to impose any preconceived or controversial issues such as the socialization of medicine on Japan and the action in making experts temporarily available represent nothing but healthy assistance in response to a normal request from a fellow governmental agency."

This reply seems clear enough. It will be interesting to follow developments in this matter to see if General Witsell's statements are fully borne out. Watchfulness is particularly indicated by pertinent charges made by Representative Forest A. Harness (R., Indiana), chairman of a house subcommittee investigating expenditures by agencies of the Federal Government on publicity and propaganda for compulsory health insurance. The charges were made in a letter to Chairman John Taber of the Appropriations Committee urging that the committee in future eliminate funds for overseas travel by staff members of federal agencies interested in advancing socialized medicine in foreign lands.

Representative Harness presented eight specific findings and charges as the conclusions of his committee's investigation of the mission to Tokyo:

"(1) That the health mission to Japan is composed entirely and exclusively of men long identified in the public record as advocates and proponents of socialized medicine not only in the United States but throughout the world.

"(2) That the real purpose of this mission is to lay the ground work for a system of socialized medicine in Japan.

"(3) That the scheme for such a mission originated in the Division of Research and Statistics in the Social Security Board in Washington, and nowhere else.

"(4) That the nominal request for the mission was engineered through the General Headquarters of the Supreme Commander in Tokyo by federal employees sent from Washington for that particular purpose.

"(5) That General Douglas MacArthur does not favor—and does not approve—any plan to establish compulsory socialized medicine in Japan.

"(6) That the dispatch of this mission to Tokyo for the purpose indicated in Mr. Wandel's letter to Mr. Falk under date of June 14, 1947, is a gross misuse of public funds.

"(7) That the real purpose of the mission is not to assist Japan in working out her basic problems in health and welfare, but to force upon that country a compulsory system of socialized medicine.

"(8) That although the questions here involved

are of a health and medical nature, the Surgeon General of the United States Army was not consulted in reference to the problems involved."

Harness' letter said further:

"I deem it inappropriate for federal employees, at the expense of the American taxpayer, to travel throughout the world preparing or assisting in the preparation of legislation to be adopted by foreign countries when similar legislation, long pending, has not been approved by the Congress of the United States.

"We are continuing our investigation of the origins and real purposes of the Tokyo health mission. Meanwhile we believe that your Committee would want to have these facts before it when the next appropriation bill comes up for the Public Health Service and the Social Security Board.

"It has also come to the attention of our committee," the letter said, "that Dr. B. M. Davis, one of the members of the Tokyo mission, returned only recently from London, where he was attached to the British Ministry of Health, to assist in the national program for socialized medicine in England. He is the son of Mr. Michael M. Davis, chairman of the executive committee of the Committee for the Nation's Health, the foremost lay organization agitating for socialized medicine in the United States, as embodied in the Wagner-Murray-Dingell bill. The Committee for the Nation's Health, as our previous reports have delineated, is the principal national organization in the United States engaged in distributing the propaganda of the Social Security Board supporting socialized medicine."

S. F. Medical Society States Position on Health Service System

The following is the text of a letter from the San Francisco County Medical Society to the Health Service Board, Health Service System of San Francisco.

Gentlemen:

This letter is to give formal notice to your Board that the San Francisco County Medical Society has received the resignations of 880 doctors from the professional staff of the Health Service System, which will become effective immediately when submitted by our Society to your Board.

We also wish to advise you that at a special meeting of the Board of Directors of the Society it was decided to submit these resignations to your Health Service Board on November 10, 1947 unless, prior thereto, your Board has agreed to reorganization of the Health Service System on a sound medical basis acceptable to the Society and the doctors who serve the System.

This notice is given so that your Board, if it sees fit, may appoint a committee to discuss the problem with a similar committee representing our Society before final action is taken, and so that necessary steps can be taken to provide adequate medical care for the thousands of city employees who are compelled to pay dues to the Health Service System.

Regardless of the course of action you may decide upon, we wish to assure you that there will be no interruption in the medical care provided city employees. Their doctors will continue to treat them, but as private patients, if your Board fails to provide an acceptable alternative program. For your information, the County Medical Society maintains a physician-patient service agency known as the Bureau of Medical Economics—and that Bureau will guarantee to arrange for the finest standard of medical care in any distressed cases among city employees, regardless of ability to pay.

As you well know, our County Medical Society, for months past, has protested to your Board against questionable practices and unethical policies of the HSS management, designed to lower the quality of medical care provided city employees and members of their families who are enrolled in the Health Service System. We have repeatedly warned that reputable doctors could not continue to serve the System unless conditions were corrected.

The advice of the medical profession has been entirely disregarded and our communications have gone unanswered. Every suggestion we have made, in an attempt to avert the impending crisis, has been brushed aside. Under the circumstances, if there is a breakdown in the Health Service System, your Board must accept full responsibility for its collapse.

To every doctor who is faithful to his profession, the health and welfare of his patients must come first, and the great majority of the doctors on the HSS panel have decided that they cannot in good conscience remain as members of your staff. They have reached this decision because of constant bureaucratic interference with their practice of medicine and constant pressure from the HSS management to deny their patients adequate medical and hospital care.

There is no need in this letter to re-state all the medically unethical and actuarially unsound policies and procedures of HSS which have contributed to the present crisis. The repeated protests and warnings of the County Medical Society, appealing to your Board for remedial action, are in your files and are a matter of public record.

Specifically, we refer you to our letter of June 18, 1947, calling the attention of your Board to a letter sent out by your medical director, Dr. Alexander S. Keenan, to all doctors on the HSS panel, pleading that the Health Service System was in financial difficulties and calling on the doctors to lower the quality of medical care provided city employees and insured members of their families.

This indefensible directive from the HSS management has never been recalled or modified in any degree, despite the fact that our Society warned your Board that we could not countenance treating city employees as "second class patients," or endangering their health by refusing them adequate medical attention.

This HSS directive, in direct violation of sound medical practice, asked doctors on your professional staff to:

1. Limit and restrict the use of laboratory tests, x-ray examinations and normal diagnostic procedures—and to substitute "routine examinations" for careful, scientific diagnosis. The diagnostic procedures thus restricted are essential safeguards for the early detection of cancer, tuberculosis, pneumonia and other serious diseases.

2. Discourage patients with "minor ailments" from seeking medical treatment and advise them to use "home remedies."

3. Deny hospitalization to HSS members, except in emergency cases, without specific authorization of the medical director of HSS.

No doctor could follow that directive from your HSS management without violating his code of ethics—and without endangering the lives of his patients.

The hundreds of resignations from the professional staff of HSS, which have been turned in to our Society for submission to your Board, are a direct result of that type of questionable practice and unethical procedure in the conduct of the Health Service System.

There were fundamental faults in the framework of the Health Service System when it was first created 10 years ago—and now that complete reorganization of the System on a sound medical and actuarial basis has become imperative, unless it is to be abandoned, we believe your Board should initiate action to remedy its basic weaknesses.

The vital flaw in the Health Service System is that it is a *compulsory system*, which city employees are forced to join as a condition of their employment, and was created as a laboratory experiment in socialized medicine. Like most compulsory systems, it started out by promising too much for too little—in an attempt to stifle opposition to its compulsory payroll deduction features. And like most socialized medicine systems, when financial difficulties developed it first siphoned off funds needed for medical services to help defray the costs of bureaucratic overhead. When that failed to balance the books, the System increased its rates to insured members—and then took the final step, characteristic of all experiments in socialized medicine, by demanding that doctors lower the quality of medical and hospital care provided their patients.

Many of our doctors, familiar with the experience of socialized medicine schemes in other countries, were frankly fearful of the consequences when the System was proposed here. But once it was voted and established, they decided to cooperate in an attempt to make it successful and in the hope that it would be kept free of bureaucratic evils and shoddy procedures.

The experiment has failed.

It has failed despite the fact that members of the medical profession in San Francisco have contributed hundreds of thousands of dollars in unpaid medical services in an attempt to bolster the System during its continuing financial difficulties.

Periodically, throughout its existence, the HSS has been confronted with deficits and inability to keep its commitments. In each instance, doctors, through reduced fees, have made the necessary sacrifice to keep the System going. Hospital bills had to be paid if services were rendered. Administrative and overhead costs continued high—and never were reduced, regardless of the System's financial condition.

But when the Health Service System attempts, as it is now doing, to place drastic restrictions on essential diagnostic procedures, and to deny its insured members adequate medical care and hospitalization, our profession would be unfaithful to its trust if it continued to support the System longer.

We have no authority to act in the matter; that power is vested in your Board and in the Board of Supervisors.

We do, however, wish to make this clear-cut statement of principle for the medical profession.

We believe that the city employees of San Francisco should be given the same freedom of choice to select the type of medical and hospital care they desire that is given employees of the State of California and the City of Los Angeles.

There is nothing compulsory about either the State employee system or the Los Angeles city employee health system. The employee (under these systems) can elect:

1. To make provision for his medical care with his own doctor.

2. To join a voluntary health insurance system with indemnity cash payments to help defray his medical and hospital bills.

3. To enroll as a member of a voluntary medical and hospital service plan which will provide him with health care in time of illness.

We want to make it clear that we are not urging the selection of any particular voluntary health insurance or medical care system. As a matter of fact, we believe the city employees should be given the right to choose between several systems, and select the one that best suits their needs.

The city employees of San Francisco are entitled to that freedom of choice—and we believe your Board should take action to see that they have it. The present intolerable conditions in the Health Service System are the inevitable outgrowth of a compulsory, bureaucratic system, and attempts to continue with the System are foredoomed to failure.

We believe and we strongly recommend that in any new program which may be established to provide city employees with prepaid medical care that third party interference between the doctor and his patient must be eliminated.

If a committee representing your Board desires to discuss the problem, our County Medical Society will be glad to cooperate with you.

BOOK REVIEWS

HISTOPATHOLOGY OF THE EAR, NOSE AND THROAT. By Andrew A. Eggston, B.S., M.D., and Dorothy Wolff, A.B., M.A., Ph.D. 1947. Illustrated. The Williams and Wilkins Company, Baltimore. Price $18.00.

Otolaryngologists in this country have long felt the need of an authoritative book on ear, nose and throat histology and pathology. The "grapevine" indicated that something to fill this void was in the offing. Hopes were high that the work would be informative and practical.

The volume has arrived and surpasses all expectations. This monumental book of Dr. Eggston and Dr. Wolff evidences superior knowledge, meticulous thought and painstaking investigation of available literature. It is encyclopedic in character, not only for its fund of information but also for its valuable bibliography for anyone interested in further investigation of any of the numerous subjects.

The title does not do justice to the content of this 1060-page book. The authors, in addition to having satisfactorily covered the histopathology, have included information of the basic sciences which relate to the ear, nose and throat. There are excellent chapters on the comparative anatomy, embryology and physiology of the ear, the nose and accessory sinuses, the pharynx and larynx. There are beautifully illustrated chapters on the histology of the ear, nose and accessory sinuses and larynx. The histology of the larynx, while informative, is not so completely illustrated as the others. This is not mentioned as a fault, but as a suggestion for the future editions.

The chapters on histopathology cover every portion of the ear and temporal bones including the nerve and blood supply, the nose and the accessory sinuses, intracranial complications, the nasopharynx, the pharynx, and larynx. Many of the illustrations are accompanied by correlative, helpful clinical histories.

There are 505 figures, nine in color; and 28 plates, 15 in color. The colored reproductions are only fair but the illustrations, in general, are excellent. The printing and the paper are of fine quality.

This valuable contribution is highly recommended. In fact, it can be considered indispensable to the library of every otolaryngologist. Dr. Eggston and Dr. Wolff are to be congratulated on this superior book which will undoubtedly prove to be of great help to everyone interested in the problems of the ear, nose and throat.

* * *

THE TREATMENT OF DIABETES MELLITUS. By Elliott P. Joslin, A.M., M.D., Sc.D., Clinical Professor of Medicine Emeritus, Harvard Medical School, Medical Director, Baker Clinic, New England Deaconess Hospital. Eighth Edition, thoroughly revised, published November, 1946. Octavo, 861 pages, illustrated. Cloth, $10.00. Lea & Febiger, Washington Square, Philadelphia.

The eighth edition of this standard text and reference work on diabetes should be as well received as its predecessors have been. The senior author and his collaborators have been constant contributors to progress in the understanding and treatment of diabetes mellitus, and their thorough revision of this volume has greatly enhanced its worth.

The multi-faceted aspects of diabetes are thoroughly covered in lucid fashion in well organized chapters. Appropriate references to the literature are included in such a manner as to make them readily available to the reader. The new chapter on alloxan diabetes is excellent, and will be of particular interest to those who have not followed the recent experimental studies of this drug in the production of diabetes in animals. This edition will continue to hold its place as a leading text in its field, and deserves careful reading by every physician interested in diabetes.

* * *

INFANT NUTRITION. Jeans and Marriott. Fourth Edition, 495 pp. and 36 illustrations. Price $6.50. The C. V. Mosby Co., St. Louis, Mo. 1947.

The first edition of this book appeared in 1930 at a time when the broad principles of nutrition were well established but had not yet thrown off the burden of empiricism in practice. Various more or less contradictory systems of feeding infants were still in vogue and a great deal of confusion undoubtedly existed. It was Marriott's purpose in writing his text to explain the basic principles in simple language and to present practical methods, based on these principles, for the feeding of normal infants and children and, similarly, to discuss the deviations from the normal that occur during disease, together with the methods of treatment which logically followed. This general plan has been followed in the successive editions. Since Marriott's death in 1936, a year after the second edition appeared, the work of revision has fallen to his former associate, Dr. P. C. Jeans, Professor of Pediatrics at the State University of Iowa, whose eminence in the field of nutrition is widely recognized, and it is proper that his name should now head the authorship of the new edition.

The work has been brought up to date in nearly all respects. The reader and prospective buyer should perhaps understand that this is a book for careful study, to be read attentively, rather than to be used merely for quick reference, since it is intended to familiarize the reader with the fundamentals which will permit him to handle pediatric problems with real understanding. In this sense it is designed for medical students and for practitioners who desire to review the subject intensively and are willing to spend the time necessary to attain that end. Indeed, the practitioner who is looking for a single mode of therapy or even to get the authors' preference may have some difficulties. Various methods of attaining a given end in, say, the use of vitamins or of electrolyte replacement solutions or of a treatment for tetany are given, and the reader will find himself confronted by a variety of choices, from which he will have to make his own selection.

A reviewer can always find items with which he disagrees or with which he can find fault, and this work is no exception. There is, for instance, what the reviewer regards as overemphasis on such things as acidified milk, which is now fast losing its popularity, and the parenteral causes of diarrhea, with only brief mention of epidemic diarrhea of the newborn, its relation to virus infection, and its special problems of prevention and treatment, but on the whole the information is ample and modern. The reader will find excellent and highly informative chapters on the various phases of metabolism, on the vitamins, on nutritional requirements, on breast and artificial feeding, on common infections and on rickets, scurvy and tetany. A final chapter on miscellaneous techniques, including transfusion and parenteral injection of fluids, is of practical value. The index is adequate.

ATLAS OF CARDIOVASCULAR DISEASES. By Irving J. Treiger, M.D., Assistant Professor of Medicine, University of Illinois, Chicago; In Charge of Cardiographic Department, Presbyterian Hospital, Chicago; Consulting Cardiologist, Municipal Tuberculosis Sanitarium, Chicago. Illustrated with 69 Plates Containing 244 Illustrations, 11 in color. 1947. The C. V. Mosby Company.

Examples of the common types of heart disease are presented by the author, with brief clinical summaries, roentgenograms, electrocardiograms, and autopsy material. The only notable omission is that of thyroid heart disease. Illustrative material is clearly reproduced, and except for indistinct descriptive lettering on some of the roentgenograms, is excellent throughout. The roentgenographic material which the author has selected is well chosen, and correlation of the ante-mortem x-rays and necropsy specimens is the best feature of the atlas.

The material presented in the text is elementary in character, and diction and syntax are such that it is not easily read, nor can the author's reasoning be readily followed. The author's statement that arteriosclerotic heart disease may be characterized by aortic insufficiency and followed by left ventricular failure on this basis, is, in the opinion of the reviewer, misleading and unsupported by evidence presented in this book. The differentiation between "congenital anomalies of the heart" and "congenital heart disease" on the basis of the presence of congestive heart failure seems confusing and to serve no useful purpose. Similar differentiation is made in regard to arteriosclerotic and hypertensive heart disease: "Hypertension with left ventricular hypertrophy as shown on the roentgenogram and electrocardiogram is not hypertensive heart disease. It may be called so, if cardiac failure is associated with and caused by hypertension."

The electrocardiograms presented include the single chest lead, CF_4, and interpretations at times are questionable in the reviewer's opinion. The assumption that low voltage in the electrocardiogram may be considered as evidence of "myocardial insufficiency" cannot be supported as sound electrocardiographic interpretation. Similarly, the use of "coronary artery disease," as an electrocardiographic diagnosis, apparently based on non-specific abnormalities of QRS and T, is hazardous and too frequently a source of error to be justified.

* * *

THE ENGRAMMES OF PSYCHIATRY. By J. M. Nielsen, M.D., F.A.C.P., and George N. Thompson, M.D. Price $6.75. Chas. C. Thomas, Publisher.

This volume of approximately 500 pages may be recommended as a textbook for medical students, as a source of reliable information regarding psychiatry for the general practitioner, and as a most interesting document for serious study by psychiatrists and neurologists alike.

That it falls short of its objective of explaining all the phenomena of the disordered mind on the basis of experimentally demonstrated neurophysiological facts is due to no shortcomings of the authors, but rather to the unfortunate gaps in our knowledge. There remains, in spite of efforts such as are recorded in this book, a chasm between our knowledge of the brain as established by neurophysiology, and our knowledge of human behavior, most of which has come not from the laboratory but from the experience of psychiatrists in their dealings with the mentally ill.

The neurological orientation of the senior author is obvious throughout the book, which suffers not at all from this fact. It is, however, where this discipline does not produce too satisfactory an explanation for observed phenomena that the weak points of the work become obvious. Thus less than 10 per cent of the pages are devoted to the psychoneuroses, although these syndromes certainly account for the great majority of cases seen by the psychiatrist.

The authors are truly eclectic; they are willing to accept the findings of any school so long as they do not conflict with accepted neurophysiological fact. From the standpoint of a strict adherence to any one of the many dogmatic schools of psychiatry this book probably will not be acceptable; so much to its credit. However, even the most liberal will probably take exception in some degree to the minimal consideration given by the authors to the effect of factors in the early environment of the patient on the later manifestations of his mental illness. Certainly we have learned that early environmental factors (and this reviewer does not include in this category intra-uterine impressions) are of the utmost importance, transcending in the great majority of cases those factors due to heredity and to organic changes in the nervous system.

In spite of the shortcomings listed above, this book remains a valuable contribution, and is a closer approach to a satisfactory textbook of psychiatry than any that the reviewer has had the opportunity of reading to this time.

* * *

DISEASES OF CHILDREN. Patterson & Moncrieff, Fourth Edition. Published 1947. The Williams & Wilkins Company. $9.00.

The British textbook is interesting for comparison with our own. There are certain chapters, particularly the one on breast milk and breast feeding, that are enlightening and well worth perusal. Then, too, it is always stimulating to compare points of view from different countries, for no matter how objective scientists try to be, traditional thoughts, ideas and concepts will be perpetuated in our literature and such points of view are often best challenged by reading some one else's traditions and concepts. Aside from this, the book is not of the quality of our best pediatric texts, either in organization or content. It is the work of many authors, which leads to some duplication and always to considerable difference in quality, making the book as a text difficult to evaluate.

* * *

NEW AND NONOFFICIAL REMEDIES. Issued under the direction and supervision of the Council on Pharmacy and Chemistry of the American Medical Association. J. B. Lippincott Co., Philadelphia.

The 1947 edition of New and Nonofficial Remedies continues the classification of accepted remedies according to action and use; the large number of new accepted drugs and the larger number of accepted preparations of established drugs has greatly enlarged the book within the last three years. Among the newly accepted remedies are Carbowax, Digoxin, Diphenhydramine Hydrochloride (Benadryl), Folic Acid, Mestilbol (Monomestrol), Merperidine Hydrochloride (Demerol, Isonipecaine), Naphazoline Hydrochloride (Privine), Nitrofurazone (Furacin), Parenamine, Phenolized Gelatine, Streptomycin, Suramin, Thiouracil, Trimethadione (Tridione), Tuamine, and Vonedrine.

Items dropped include Ethylhydrocupreine Hydrochloride, Kephrine Hydrochloride, Larocaine Hydrochloride, and Lunosol colloidal silver chloride).

Three items have been added to the list of U.S.P. preparations to be exempted from consideration, namely Ammonium Chloride, Lactate-Ringer's Solution, and Sodium-r-Lactate One-Sixth Molar.

In the 1947 edition there is a greater tendency to emphasize the non-proprietary name. A number of new non-proprietary names appear, and include Amydricaine (Alypin), Digitoxin (Digitaline), Iodopyracet (Diodrast), Methacholine (Mecholyl), Nitromersol (Metaphen), Phenylephrine (Neosynephrine), and Trimethadione (Tridione).

There are a number of changes in classification of drugs and corresponding chapter headings. Chapter I is changed from Allergenic Preparations to Agents Used Against Al-

lergy, in order to include Diphenylhydramine Hydrochloride (Benadryl); Chapter II has been changed from Analgetics and Antipyretics to Analgetics, in line with current thought that use of a drug purely as an antipyretic is unsupported by scientific evidence of its value in relieving the underlying disease. Dihydromorphinone Hydrochloride (Dilaudid) and Merperidine Hydrochloride (Demerol) are now included in this chapter, along with Salicylate, Aminopyrine, and Cinchophen. Chapter XV is now Oxytocics instead of Ecbolics; the included preparations remain the same, namely those derived from ergot. Posterior Pituitary preparations remain in the chapter on Hormones. The title of Chapter XIX is expanded from Metabolic Agents to Agents Used in Metabolic Disorders. A new chapter (XXIV) is entitled Unclassified Agents, and includes preparations of gold and of iodine.

Another departure from former practice is the inclusion of all procedures for chemical or biological standardization in a separate Section B; Section A lists accepted items, with non-proprietary and proprietary names, dosage forms, and brief descriptions of actions and uses.

New and Nonofficial Remedies is esssential for the library of every physician who attempts to prescribe scientifically, and specifically for the case at hand. Its importance as a book of standards is second only to the United States Pharmacopoeia and the National Formulary. However, it is confusing to find so many preparations, distributed by a large number of drug manufacturers, as occur in some parts of the book. For example, there are seven pages devoted to procaine preparations, with 21 preparations and mixtures and 13 drug companies. Twenty-one companies offer 25 preparations of sulfadiazine, and 23 firms prepare penicillin in 58 dosage forms.

* * *

STANDARD METHODS of the Division of Laboratories and Research of the New York State Department of Health. Third Edition. By Augustus B. Wadsworth, M.D. Illustrated. Copyright 1947. The Williams & Wilkins Company, Baltimore. Price $10.00.

This storehouse of information of public health laboratory methods has been an essential reference book in public health laboratories since the publication of the first edition in 1927. In this third edition Dr. Augustus B. Wadsworth culminates a career of 33 years of noteworthy contributions to medicine and public health as director of the laboratories of the New York State Department of Health and brings up to date the procedures and techniques developed during his one-third century as director of that laboratory. The general format of past editions is retained. Through 75 chapters detailed descriptions are given of all techniques and procedures currently employed in the highly developed and efficient New York State laboratory system. The details of procedures used in preparation of glassware and media, of calibration of instruments, etc., are particularly applicable to clinical laboratories.

This edition contains numerous changes and additions. Noteworthy among these is the method for the preparation and use of the new cardiolipin antigen in the serodiagnosis of syphilis, which has been developed in the New York State laboratories since the publication of the second edition. This information is particularly pertinent to clinical and hospital laboratories. A chapter is added on biologic assay, and numerous changes and additions are to be found in other sections. The appendix provides excerpts from the State Law and Sanitary Code relating to laboratories and gives procedures for the submission of specimens. The importance of these latter details is well recognized by all workers in public health laboratories. The chapters on preparation of biologics will probably be of lesser interest to workers in clinical laboratories.

It is replete with bibliographical references that further enhance its value.

This edition should be available for ready reference in every public health laboratory and will be found to be of value to clinical laboratories where bacteriology and serology are done.

* * *

A HANDBOOK OF COMMONLY USED DRUGS. By Michel Pijoan, M.D., Director, The Chemical Foundation Laboratory, University of Colorado, and Clark Harvey Yeager, M.D., Chief of the Medical Section, Health and Sanitation Division, Office of Inter-American Affairs, Washington, D. C. Published 1947 by Charles C. Thomas, Publishers, Springfield, Illinois. Price $3.75.

This small book has been written for those who undertake trips in remote areas or in the field, where access to more complete texts is impossible. As such, it serves a useful purpose. Short discussions of the pharmacologic action of the common drugs and very brief data on dosage are included in the first section of the book.

The second section includes a more detailed but brief discussion of the clinical manifestations, prophylactic and definitive treatment of the tropical diseases. This section is up to date and clearly written and would be very helpful in isolated areas in the tropics. The more complete "Manual of Tropical Diseases" distributed by the National Research Council would, however, be of greater value but would not have the pharmacologic notes of the first section.

An appendix is included that gives the formulae for such miscellaneous preparations as acne ointment, DDT mixtures, etc., as well as metric equivalents, obstetrical tables, etc., that would prove useful.

* * *

THE 1946 YEAR BOOK OF GENERAL THERAPEUTICS. Edited by Oscar W. Bethea, Ph.M., M.D., F.A.C.P. The Year Book Publishers, 304 South Dearborn Street, Chicago. Price $3.75.

The Year Books are well known to the medical profession and the 1946 edition of Therapeutics is similar in style and content to its predecessors. Abstracts of articles dealing with therapeutics are arranged according to subject matter with occasional editorial comment. The articles are mainly from American journals and few foreign articles are reviewed. There is an index which is helpful.

The volume should prove valuable in calling attention to articles one may have missed in his reading and to give, in a general way, the scope of therapeutic thought in 1946.

One criticism that occurs to the reviewer would be the lack of sufficient interpretive opinion on the part of the editors. Some of the articles reflect different points of view on the same subject, and more comment might be helpful. Ideally, of course, the reader should look up the original papers and draw his own conclusions.

* * *

DOCTOR, DON'T LET ME DIE. By S. S. Keiner. Published 1947. Boards; 486 pp. Meador Publishing Company, Boston, Massachusetts. 1947. Price $3.50.

This incredible and unblushingly hysterical approach to the problem of socialized medicine comes with the benediction of Henry Sigerist who states that he actually read it. Since it is 486 pages long and composed of some rather astonishing conversational pieces, this is distinctly surprising. The book purports to be a physician's experience in practice and a fearless exposure of the flaws in medicine. The author must have been subject to large doses of the yellow school of journalism as a young man to acquire such an incredible style. The garbage collector may be kind enough to take your copy away if by any chance one should fall into your hands. However, he will need persuasion.

MEDICAL JURISPRUDENCE

MALPRACTICE: SUFFICIENCY OF EVIDENCE; QUALIFICATIONS OF PHYSICIAN TESTIFYING AS EXPERT WITNESS

PEART, BARATY and HASSARD, *San Francisco*

A decision of the California District Court of Appeal, First Appellate District (50 A.C.A. 606) presents in a malpractice action two questions of some interest to physicians and surgeons, namely, (1) what evidence is sufficient to require the presentation of a malpractice case to the jury for decision, and (2) what qualifications must a physician possess in order to be competent to testify as an expert witness in such an action.

The case involved an appeal from an order granting a new trial after judgment for the defendant in a malpractice action against a physician. The plaintiff in the action contended that her son had died as the result of the defendant's negligent treatment of a finger injured in a home accident, the son having caught his finger in the door of the bathroom, severely injuring it. In answer to the call of plaintiff, the defendant treated the wound by lifting the injured nail, squeezing tincture of merthiolate underneath it, and then packing the finger in metanic jelly and bandaging it. This treatment in substantially the same manner was continued for several days, when the boy developed symptoms of a tetanus infection. The patient, on advice of another physician, was taken to the County Hospital where an antitoxin was immediately administered. The boy did not respond to the treatment, and died the next day as a result of the infection.

After testimony on both sides had been heard, the case was submitted to the jury and a verdict was returned for the defendant. On motion of the plaintiff, the trial court granted a new trial, and on appeal from this order granting a new trial, it was necessary for the Appellate Court to pass upon the sufficiency of the evidence which the plaintiff must adduce before he is entitled to have the specific issue, of whether defendant's negligence has resulted in injury, presented to the jury, and also to pass upon the qualifications of the witness, Dr. R., who testified on behalf of the plaintiff.

The court reiterated the well-established rules of law that a physician and surgeon, in undertaking the treatment of a patient, cannot be held to guarantee the results of his treatment, but that he is bound to possess the degree of skill and learning ordinarily and usually possessed by physicians and surgeons practicing in the same locality, and is also bound to use reasonable and ordinary care and skill in administering medical and surgical treatment to the patient. On trial of the case, it was plaintiff's contention that the defendant physician had not used reasonable and ordinary skill in caring for the injured finger and, as a result, the boy had died. More particularly, plaintiff contended that the defendant had not used ordinary and reasonable care and skill, in that he had not properly cleansed and sterilized the wound, nor had he administered tetanus antitoxin. In support of this contention, the plaintiff presented the testimony of Dr. R., a physician practicing in the county, as an expert witness. In the words of the Court:

"Dr. R., a physician and surgeon called by the plaintiff, testified that under the circumstances of the case 'the use of reasonable medical care and skill by the attending physician demanded a thorough cleaning of the sutured finger and to give the finger free access to the air to overcome any anaerobic tetanic germs.'"

The Court said that where the evidence presented tends to show that the alleged negligence resulted in an infection producing death, it presents a case for the jury. Further, the Court held that from the "expert testimony" set forth above, it could be reasonably inferred that the infection resulting in the boy's death would not have occurred if the wound had been properly cleaned and antisepticized. A new trial was granted after the decision of the Court in favor of the defendant because the trial judge, in his instructions to the jury, had limited the question of negligence to the failure of the defendant to administer tetanus antitoxin, and had precluded any consideration of the physician's alleged failure to sterilize.

The defendant had urged at the trial objections to the competency of the physician called by the plaintiff to testify as an expert witness on the question of what treatment a physician practicing in the locality would have administered in the exercise of reasonable medical care. The usual requirement is that the physician testifying be acquainted and familiar with the standards of care and skill ordinarily used and possessed in the locality in which the alleged malpractice has occurred, and that he be familiar with the usual methods of treating the particular injury or illness involved. The plaintiff's witness testified that he possessed this knowledge: and since his educational record and past experience so indicated the defendant physician could interpose no valid objection as to competency.

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Interpretation of Gastric Symptoms*

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IS it necessary to justify presenting a paper on the interpretation of gastric symptoms? I would say yes. What is our objective in devoting time on this panel discussion to the problem of symptomatology? Basically, we are interested in determining whether or not our patient has serious disease. If he presents himself for examination with gastric complaints—or if we elicit gastric symptoms in a routine examination, we must evaluate them. The two great problems in gastric disease, cancer and ulcer, require action on the part of the physician for worthwhile remedial therapy. In cancer it is to detect the disease early and to act fast. We are failing in such detection of early carcinoma of the stomach in the vast majority of instances. Our diagnostic success is much greater with ulcer. This contrast in early diagnosability in these two numerically preponderant diseases has many apparent explanations. Are these explanations valid? We admit we can suspect most ulcers with considerable accuracy simply by the time, food relief pattern story. We can suspect the cancer story only when it is characteristically far advanced and almost too late for surgical cure.

Is a diagnostic lag a necessary feature in the recognition of this disease? Does gastric carcinoma need the observations of a Mackenzie, who, in cardiology clarified the arrhythmias so that the knowledge of what was wrong with the heart beat led to proper management? Forty years ago we had the rheumatic "grab bag." Every joint that hurt or was inflamed was labeled "rheumatism." With the description in 1905 of atrophic and hypertrophic arthritis came the realization that all chronic joint disease need not be the same. Gradually there evolved an etiological description of gout, Charcot joint, spondylosis, spondylolisthesis, spondyloarthritis, rheumatic fever, specific joint infections due to the gonococcus, pneumococcus and other organisms. With such knowledge a more rational therapeutic approach became a practical weapon in the handling of arthritics. Similar analogies can be drawn in many other fields of medicine within our own lifetime. Witness the gradual emergence of dermatology from the days of purely morphological description—and of the classification and management of anemias.

In gastric disease we are not lacking in that etiological approach. Our limitations practically are in our inability to help that vast number of patients who develop carcinoma of the stomach and die of it—and the large number of patients who develop peptic ulcer, too many of whom suffer or die of it in spite of diagnostic and therapeutic advances. In our clinical approach to the problem are we limited in diagnostic devices? Probably not. The x-ray is of invaluable help—gastroscopy adds a degree of accuracy. The diagnostic index of suspicion is a tremendous aid, but still morbidity and mortality statistics tell us of our failure. A resume of the information that subjective symptoms in gastric disease can give us may therefore orient us more fully, even if it only indicates our diagnostic limitations.

In this area of laboratory aids to diagnosis, history taking is unfashionable. More than that, it is time consuming; and, after all, every one is overworked and in a rush. Our psychiatrically minded friends have performed a great service. The psychosomatic approach to gastro-enterologic problems re-emphasizes the necessity of knowing the patient's personality and emotional background. One can't know this aspect of the patient without asking questions and listening to him, and evaluating his symptoms; and the elucidation of such a story cannot be done without cerebration. Alvarez has done yeoman's

* Read as a part of the panel discussion of diseases of the stomach before the section on General Medicine at the 76th Annual Session of the California Medical Association in Los Angeles, April 30-May 3, 1947.

work in pointing out the value of a good history. Most experienced consultants are not content to accept a second hand history in patients with an obscure diagnosis. The personal touch in extracting the history is invaluable and reaps big diagnostic dividends. A reasonably short but intelligent survey of the patient's story, as told by himself, can indicate whether or not he is neurotic. Being neurotic doesn't exclude the possibility of his having a superimposed carcinoma, and usually enhances his chances of having peptic ulcer.

To what symptoms, then, should we cock the diagnostic ear? A sense of fullness after eating is normal. That same feeling before meals may point to a variety of conditions including congestion of the liver from heart failure, hepatitis, fever, intrinsic organic disease within the stomach or gastric retention due to pyloric obstruction. The nausea of reverse peristalsis tells us either that the pylorus is in spasm or is partially obstructed from any cause. Burping or belching is normal in moderation. Never, even if severe, does it give dependable indication of serious disease. Heartburn, so frequent statistically, also is not dependable in differentiation between organic and functional disturbances.

We come then to rely on the history of pain as the most reliable guide to gastric disease. Time will not permit a complete discussion of the anatomical origins of pain but the most important concept is that visceral pain is an entity and comes either from distention or traction of the organs. The well established pathways of pain from viscera to spinal cord are of importance clinically only because of the overlapping of such pathways. Thus lesions of the hepatic ligaments, the liver and splenic capsule, the precordium and central portions of the diaphragm send stimuli through the phrenic nerve to the 4th cervical segment. Likewise the margins of the diaphragm and the capsules of the stomach, liver, spleen, pancreas, gall bladder and small bowel send impulses through the splanchnic nerve to the 5th to 10th dorsal segments. Lower in the abdomen, impulses go to lower dorsal segments. The vagus takes impulses from the stomach and esophagus, and tracheo-bronchial tree.

Pain arising from outside the abdomen usually from spinal nerve irritation due to arthritis, curvature of the spine, malignancy or from cardiac or pulmonary disease may lead to confusion in the evaluation of abdominal pain. We must be on the alert at all times to differentiate between these visceral and somatic origins of pain. In this connection individual susceptibility to pain plays an important factor in proper evaluation of his symptoms. About 10 per cent of the population is hyposensitive. In contrast are the 10 per cent who are hypersensitive and over-exaggerate trifling distress. The remaining majority, considered normal, are to be congratulated inasmuch as they are free from the suffering and discomfort of the hypersensitive, and possibly less likely to fall prey to advanced disease than are the hyposensitives simply because of lack of sensitivity. Libman's styloid pressure maneuver is of value clinically in recognizing this hyposensitive group.

To what characteristics of pain do we devote our attention in evaluating this symptom? Intensity or severity after due allowance for individual sensitivity, is important, but we must keep in mind that the most severe pains are often not a measure of the seriousness of the condition causing pain. Acute paroxysmal pain due to spasm is the most severe and causes the well known entities of gall bladder and renal colic, pylorospasm and cardiospasm. The latter two may be purely psychic in origin.

Location of gastric pain is helpful only insofar as it localizes visceral pain in that area. Referred pain from arthritis, gall bladder disease, hiatal hernia or spinal disease all challenge our diagnostic acumen. The common nerve pathways of hiatal hernia and coronary disease cause symptoms often indistinguishable except by the more frequent association of hiatal hernia pain with the supine position after meals and the well recognized relationship of coronary pain to effort. Either of these pains may give no real clue as to its origin, and by being limited to the epigastrium may simulate gastric disease perfectly.

On what, then, can we rely? Actually no symptoms are pathognomonic, but questioning is helpful. What about duration of pain? A long history without change in character of the pain favors functional disease. If remissions occur with complete relief, ulcer or gall bladder disease is suggested. A short story of weeks or months in a previously healthy adult is our best guide to probable organic disease, and in these patients a negative study demands repetition within a month if the original study revealed no disease. We have been too content, in some instances, to postpone second or third gastro-intestinal surveys at early subsequent intervals because of expense or fear of psychic trauma, and so have overlooked possible remediable organic gastric disease.

Recent change in the character of a patient's distress often indicates the development of malignancy in association with a benign lesion or a new process unrelated to the original diseased condition. Suddenness of onset of a particular pain, barring complications, is of little help in our major cancer and peptic ulcer problem. Rupture and colic are sudden in onset. Functional conditions, or ulcer and cancer start gradually. Rhythmic periodicity of pain as typified by the average ulcer case is practically diagnostic. Constancy of pain suggests a lesion which is developing steadily or has attained and maintained its development, such as traction or pressure of malignancy or inflammation. Change of intensity with movement suggests traction of the neoplasm or inflammatory process, but here again somatic spinal disease from the cord or from nerve irritation must be excluded. Hyperesthesias which are band-like are indicative of the latter.

The next question of importance in our history is the effect of food and medication on the pain, and a recital of the day's activities in sequence as to the effect of food on pain. With such an outline one can

frequently gain a perspective of the patient's complaint that brings into sharper focus the probability of either functional or organic disease.

In summary, then, this discussion of gastric symptoms has been a plea for more time and thought spent in obtaining the patient's story of his digestive symptoms. The time honored physical examination is no substitute for an intelligent history, for only in a minority of instances will physical findings be present in early gastric disease, and often when they are present it is too late to be helpful. Laboratory studies are of value, but delay in obtaining them or failure of early repetition of negative studies too often permits serious lesions to progress under a sense of false security. Herein lies the value of the history which is not taken perfunctorily. Much useful information may be obtained in the history, and the difficulties of extracting that information cannot be overcome by anything except continuing awareness of its possible contents.

6222 Wilshire Boulevard.

QUESTIONS AND ANSWERS

DR. HOFFMAN: "What part does absorption of blood play in gastro-intestinal ailments?"

"It plays a great part. It is a quantitative matter. Experimentally, ingestion of 350 cc. of blood is sufficient to raise the NPN appreciably. Larger amounts raise it proportionately."

The Surgical Treatment of Bleeding Peptic Ulcer*

CARLETON MATHEWSON, JR., M.D., *San Francisco*

THE surgical management of bleeding peptic ulcer is still the subject of considerable controversy. Regardless of the fact that a fairly large number of patients bleed to death on conservative medical management,[1,5,11] most internists and surgeons are reluctant to recommend surgery on a seriously exsanguinated patient. While one must admit the potential danger associated with such a procedure, experience has shown that operation during the active stage of bleeding may be the only life saving measure.

When one considers the surgical management of bleeding peptic ulcer, a clear differentiation must be made between repeated or persistent bleeding over a long period of time not controlled by conservative medical management and acute massive hemorrhage of such proportion to be an immediate threat to life. In general, it is agreed by surgeons and internists alike that patients who have severe repeated hemorrhages or persistent bleeding from a demonstrable ulcer, particularly when other symptoms of ulcer are present, should be treated by operation as an elective procedure during an interval when the patient is not suffering from the effects of loss of blood. This group of patients does not present a particularly serious problem and will not be discussed further.

Gross hemorrhage from peptic ulcer which may require an emergency operation to save life presents a particularly perplexing problem mainly because of the difficulty associated with the differentiation between those patients whose hemorrhage is likely to prove fatal if unchecked by surgery, and those in whom it will cease under proper conservative measures. Moreover, the clinical picture presented often leaves one in grave doubt as to the source of hemorrhage. Patients present themselves to the physician in all stages of reaction to hemorrhage and often bleed to death before obtaining medical aid.[2] Obviously, every effort should be made to arrive at a proper clinical diagnosis before operation is contemplated but since gross hemorrhage is not infrequently the first and only symptom, the history may be no aid in the diagnosis; and such measures as gastroscopy and roentgen examination are often out of the question because of the serious condition of the patient.

How, then, are such patients to be handled? We have come to consider any patient entering our service, who is suffering from gross hemorrhage from the upper gastro-intestinal tract a potential candidate for emergency surgery. He is followed jointly from the time of entry by an experienced internist and a surgeon capable of carrying out an emergency operative procedure, if such seems indicated.

Unfortunately, there are no definite criteria upon which one can base a fatal prognosis in any given patient. However, it appears logical by careful observation of their clinical course under appropriate treatment, to attempt to differentiate patients whose hemorrhage is likely to prove fatal and those whose hemorrhage is likely to cease spontaneously. Such patients are kept at complete bed rest under moderate doses of morphine. Food and liquids by mouth are withheld and blood is given in adequate amounts by the slow drip method. An hour by hour check is made of the blood pressure, pulse rate, respiration and hemoglobin. If the patient does not improve or if he improves and then shows evidence of repeated hemorrhage under such treatment, he should be considered a subject for early operation. Other factors of major importance in considering the indications for immediate surgery are:

* Read as a part of the panel discussion of diseases of the stomach before the section on General Medicine at the 76th Annual Session of the California Medical Association in Los Angeles, April 30-May 3, 1947.

From the Department of Surgery at Stanford University Hospital and the Stanford Surgical Service at the San Francisco Hospital, Unit of the San Francisco City and County Department of Health.

1. *Age of Patient:*

In patients under 45 years of age, death seldom occurs from a single hemorrhage and the danger to life even of repeated massive hemorrhage is less than 1 per cent. Seldom does a patient in this age group require an emergency operation. After the age of 45, death from hemorrhage increases rapidly. Figures from various clinics substantiate this statement.[1,5,11,12]

2. *Severity of Hemorrhage:*

In gross hemorrhage requiring an emergency operation there is vomiting of bright red or dark blood, or grossly bloody or tarry stools, accompanied by anemia sufficient to cause weakness, pallor, dyspnea, rapid pulse and a marked fall in blood pressure. In estimating the extent of hemorrhage, one is guided best in the early stages by the blood pressure and pulse rate. A persistently low blood pressure and a rapid pulse usually mean continued bleeding.

3. *Arteriosclerosis:*

The existence of generalized arteriosclerosis in a bleeding patient is a good indication that bleeding will continue. Autopsy studies from various reported series emphasize the frequent finding of an extensive generalized arteriosclerosis in patients who have bled to death as the result of erosion of a large vessel in the base of a peptic ulcer.[4,5,6,11,12]

4. *Number of Hemorrhages:*

Although a single fatal hemorrhage is not infrequently the cause of death in peptic ulcer, repeated severe hemorrhages in elderly patients should be of particular concern to the physician.

5. *Location of Lesion:*

Often it is impossible to localize the lesion during the active stage of bleeding. If, however, previous studies have revealed the type and location of the ulcer, it should be remembered that the location of the ulcer with reference to immediately adjacent large arteries is the determining factor in the seriousness of or fatality from hemorrhage. Fatal hemorrhage usually occurs from erosion of a posterior duodenal ulcer into the pancreatico-duodenal artery or a gastric ulcer on the lesser curvature eroding into a large branch of the right or left gastric artery.[7,9]

6. *Associated Disease:*

Patients suffering with chronic debilitating disease in addition to a bleeding peptic ulcer are less apt to survive severe hemorrhage than otherwise healthy patients.

The most frequent cause of serious bleeding into the upper gastro-intestinal tract which may be confused with bleeding peptic ulcer is the rupture of esophageal varices which are secondary to cirrhosis of the liver or portal hypertension. Other common causes are diffuse gastritis, bleeding carcinoma or benign tumor, hemorrhagic disease and aneurysm eroding into the esophagus or duodenum. A careful history, physical examination and proper laboratory studies will often serve to rule out such possibilities. On the other hand a gross hemorrhage may occasionally be of such serious nature that immediate operation is imperative and it may become necessary to undertake exploration without an accurate diagnosis. In such circumstances, certain patients will prove not to have an ulcer and others might have survived the initial hemorrhage without operation, but it is both difficult and hazardous to predict the outcome. Necessarily, therefore, operation may occasionally be performed in the absence of ulcer or upon patients who might have survived without operation.

The question of when to operate in this group of patients is also a question of considerable debate. Most surgeons who have had extensive experience with such patients agree that early operation, within 24 to 48 hours after the onset of hemorrhage, will save the most lives. Most mortality statistics substantiate this point of view.[4,6]

When early operation has been decided upon, the most important factor in a favorable outcome is an unlimited quantity of blood for transfusion. The administration of blood should be continuous, before, during and after operation until a proper blood volume has been obtained and maintained. The first undertaking at operation should be the exposure of the bleeding ulcer and the immediate control of hemorrhage by direct pressure. It is often remarkable how rapidly the patient's general condition will improve with blood transfusion once the hemorrhage has been controlled.

The type of procedure to be undertaken at operation is naturally dependent upon a number of factors such as the location of the ulcer, the type of ulcer, and the age and condition of the patient. It should be emphasized, however, that often the poor risk patient is no longer a poor risk once the hemorrhage has been controlled. Temporary procedures simply to control hemorrhage should not be carried out in such circumstances. In our experience, palliative procedures such as ligature of vessels leading to an ulcer, simple gastro-enterostomy, or placing of ligatures in the friable ulcer bed usually fail either because of loss of blood on the operating table or secondary necrosis and subsequent hemorrhage. In most instances we have been able to carry out a subtotal gastric resection without serious risk to the patient.[9]

The immediate postoperative treatment of these patients is of paramount importance. The very nature of the disease makes them poor operative risks and candidates for serious postoperative complications. Because of profound anemia whole blood transfusions are necessary before, during and following operation. Because of the number of transfusions usually necessary, it is important to watch the Rh factor carefully to prevent severe transfusion reactions.

Hypoproteinemia is common and necessitates not only frequent estimations of total plasma proteins but also of the component albumin and globulin ratio. A reversal of the albumin-globulin ratio increases the likelihood of transfusion reaction. The establishment of a normal plasma protein level is imperative, also, to insure proper wound healing and to prevent infection. This is best accomplished by the early administration of amino-acids and plasma by vein. Early postoperative ingestion of protein and carbohydrates by mouth is indicated. Feeding by mouth can be safely started as soon as normal peristalsis in the gastro-intestinal tract is reestablished.

The infusion of 5 per cent dextrose in addition to blood transfusions is necessary to maintain proper fluid balance. A fluid intake of 3 liters daily is sufficient and should be administered slowly to prevent overloading the heart. Vitamins K and C deficiencies are common and should be corrected preoperatively when possible and routinely in the immediate postoperative period.

SUMMARY

The surgical management of bleeding peptic ulcer is applicable to two major complications: (1) Chronic persistent bleeding not controlled by conservative medical management, and (2) massive hemorrhage of such proportion to be an immediate threat to life. Patients in the first group are operated upon in an interval when the bleeding has been controlled and the patient is not suffering from the effects of loss of blood, while patients in the second group constitute an acute surgical emergency and should be operated upon within 24 to 48 hours.

The most consistent criteria to differentiate patients with fatal and non-fatal types of hemorrhage are failure to respond promptly to bed rest, morphine, withholding of food by mouth and adequate blood transfusions or the recurrence of hemorrhage while on a strict regimen. Other factors influencing the indication for immediate operation are: (1) age of patient, (2) severity of hemorrhage, (3) coexistant arteriosclerosis, (4) number of hemorrhages, (5) location of lesion, and (6) associated disease.

Other lesions causing serious upper gastro-intestinal hemorrhage commonly confused with bleeding from a peptic ulcer are esophageal varices, diffuse gastritis, carcinoma or benign tumor, hemorrhagic disease, or aneurysm eroding into the esophagus or duodenum.

Large amounts of blood administered before, during and after operation are of great value in the surgical management of acute hemorrhage.

The type of operation to be performed is dependent upon the age and general condition of the patient as well as the type and location of the ulcer. Preferably a subtotal gastric resection is performed. Less extensive procedures often result in recurrent and fatal hemorrhage.

Postoperative treatment is most important and includes the administration of blood, fluids, amino-acids, penicillin, sulfonamides and vitamins.

QUESTIONS AND ANSWERS

DR. MATHEWSON: The first question: "What is your opinion of the use of continued feedings in gastric hemorrhage? (Muelengracht regime?)."

I think probably you are all familiar with Muelengracht's work. He recommends early feeding in bleeding peptic ulcer and has good figures to substantiate the success he has had with that treatment.

The difficulty in evaluating the Muelengracht regime is its lack of specific reference to any patient bleeding to death. If you study his mortality statistics, you will find that he has less than 2 per cent mortality from bleeding ulcers. That naturally encompasses all patients bleeding from peptic ulcer. If you are fortunate enough to have all your bleeders in patients under 45 years of age, no matter how you treat them, in all probability your percentage of patients who bleed to death will be small. I doubt very much that you can attribute your success to the type of treatment in that group of patients. Once the patient passes the age of 45 or 50, the possibility of bleeding to death increases very, very rapidly indeed, and, as I mentioned before, the percentages vary from 15 to 30 per cent.

If you are dealing with patients who have a possibility of one in every three dying of massive hemorrhage, then you have a very serious problem on your hands, and you must do something about it immediately. Our feeling has been that death is a possibility in all patients over 45 years of age who are quite exsanguinated when they come into the hospital.

Now, mind you, I pointed out that we must divide these patients into two very distinct groups. All ulcers, in my opinion, bleed at one time or another. They may bleed very moderately, they may bleed more extensively, or they may bleed fatally. I believe that those patients who have moderate bleeding are best treated under proper conservative medical management. That is, put to bed, put on the proper diet, and, if you wish, put on moderate feeding in the early stages of bleeding.

However, when the patient presents himself in an exsanguinated stage, he is an entirely different problem. Our experience at the San Francisco Hospital has shown that it is often dangerous to feed such patients early.

The reason I say that is that we have treated some of the patients by Muelengracht's diet during the period of excessive gastric hemorrhage, and have had some deaths in that group.

If the patient presents himself exsanguinated, has no history of previous ulcer, and has no demonstrable signs of other disease, he has been treated on the assumption that he is bleeding from peptic ulcer, on the basis that 90 per cent of the patients bleeding from the stomach are bleeding from a chronic ulcer.

In the past we have hoped to get some diagnostic information by the early administration of barium. We have had patients who have bled to death immediately following the administration of barium. I think it is equally dangerous to place food or barium in the stomach of a patient who is bleeding excessively.

The next question: "Have oral hemostatics been of any help in control of gastric hemorrhages?"

In my experience, no.

Next question: "How can bleeding from diffuse esophagitis or esophageal ulcer be controlled?"

In our experience massive hemorrhage from lesions in the esophagus is often difficult to diagnose. However, if the patient has a history of cirrhosis of the liver, and is bleeding, he is best treated by conservative medical management. In our experience fatal bleeding is less apt to occur than in those patients who have chronic duodenal ulcer.

Question: "When should transfusion of whole blood cells be given for bleeding ulcer?"

It is my feeling, and I believe the feeling of most clinicians who have access to large quantities of blood through a blood bank, that the best treatment for massive hemorrhage is transfusion. There is some evidence to the effect that rapid transfusions may cause continued bleeding. We are inclined to disbelieve this. We feel that all patients who have had massive hemorrhage, and are suffering from exsanguination, should have transfusions of blood immediately. Blood transfusions should be continued until the blood volume has reached a normal level, until bleeding has stopped, either spontaneously, or following operation.

Question: "During the period of observation of a patient with massive hemorrhage, do you transfuse?"

I think I just answered that question. Yes.

Question: "What is the technique of closure of opening of duodenum to apply pressure on the pancreas?"

Generally speaking, if a duodenal ulcer is found at operation, and bleeding is controlled temporarily by pressure, a subtotal gastric resection is done. It is not necessary to close the ulcer of the duodenum. If the duodenal ulcer is fixed to the pancreas it is best to resect the duodenum from the margins of the ulcer and leave the ulcer in place. The vessel leading to the ulcer must be tied.

Occasionally the ulcer is far enough distal in the duodenum so that it cannot be closed without jeopardizing the bile duct. In that case it is best to leave the ulcer in the duodenal stump, and do a so-called "exclusion" operation. In our experience, if an exclusion operation is performed and the pyloric mucosa is intact, marginal ulcer is a frequent complication. It is desirable to remove the pyloris mucosa, leave the ulcer intact, close the duodenum proximal to the ulcer, and do a gastric resection. I think that in the experience of most surgeons such a procedure has given the best results.

Question: "How would you treat a patient 60 years of age, with a penetrating partially obstructing ulcer of many years' duration? He had several episodes of severe bleeding for seven years. He had been emptying his stomach nightly with a tube. He ate one-third of a box of soda daily. Seen by me 12 hours after onset of bleeding, at the end of 48 hours' conservative treatment with 3,000 cc. of blood, he was still bleeding and losing ground rapidly. He had a carbon dioxide combining power of over 100 and blood chlorides of 350."

I think the whole purpose of my presentation here was to tell you that a patient with that history in all likelihood is bleeding from a chronic duodenal ulcer, that in all likelihood he will continue to bleed, and bleed to death unless he is operated upon.

I would like to answer one question I have asked myself, and that is, is vagotomy the proper treatment for bleeding duodenal ulcer?

I can say that in chronic duodenal ulcers, penetrating into the pancreas, in all likelihood the pancreatico-duodenal artery is involved. In such cases vagotomy is dangerous because these are large ulcers, and, due to their size and the amount of scar tissue present, do not have the ability to contract and heal. We have seen one such patient bleed to death five weeks after a successful vagotomy—that is, after a vagotomy which produced the proper physiological effect.

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Certain Roentgen Manifestations of Gastric Lesions*

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It is attempted here to review certain features of the roentgenologic aspects of gastric disease, starting from rather broadly defined manifestations, considering lesions which might produce them, and circumstances in which diagnosis may remain obscure. Differentiations of types of lesions usually are possible in the majority of cases. At times lesions are not roentgenologically distinctive. The limitations of this method of examination must be recognized.

The literature contains practically all that might be said on the subject. Roentgen examinations have been made more elaborate and have been improved by mucosal relief studies and other refinements. Gastroscopy has become more freely available, though not yet to the extent that is desirable.

Recent correlations of roentgenologic, gastroscopic, surgical and pathologic findings indicate that the conclusions of the gastroscopist and/or the roentgenologist may be incorrect. The surgeon at operation may be dependent upon the histologic findings for the correct diagnosis. Since the possibility of gastric carcinoma is to be considered in so many cases, and since after many years sufficient progress has not been made in recognizing it usefully early, the problem requires continual reconsideration.

The *niche*, excluding its incidental simulants, indicates ulcer. A question most insistently asked of the radiologist is whether the ulcer is benign or malignant.

The niche of typical benign ulcer has one of the most "characteristic" appearances encountered in gastro-intestinal roentgenology. The smooth margined protrusion from a usually broader base, ending in a rounded, flat or bluntly conical floor and the apparent projection of the niche beyond the confines of the stomach are classical. (Figure 1.) There may be marginal encroachment by inflammatory thickening of the gastric wall or radiating folds of scarred contraction.

Although it is well known that any such ulcer may be carcinomatous, so many of these are seen to disappear promptly on serial studies during medical ulcer management, that it is difficult to avoid the temptation to report them as benign. The radiologist may report them as having no roentgenologic criteria of malignancy, but this fact does not exclude carcinoma. This is superfluous warning to the surgeon and gastro-enterologist, but not to the physician who encounters ulcers incidentally in a busy, varied practice.

Gastroscopy may serve a useful purpose to rule out malignancy not evident to the radiologist. Before healing is considered to be complete, disappearance of the lesion should be established by both methods if possible. Ulcer may disappear to roentgen observation before it does to gastroscopic observation. Schindler has decried the use of the trial of healing.[9] There have been warnings that carcinomatous ulcers may diminish or apparently disappear under a medical ulcer regime. Because of the possibility that a niche may not be apparent on a single roentgen examination, persistent disappearance of the lesion must be established.

Criteria of malignancy of ulcer are more reliable than those of benignity. The meniscus sign, properly understood, appears almost pathognomonic. Kirklin[8] was incited to review the situation because of confusion on the subject. A basal collar of neoplastic tumefaction produces the negative shadow meniscus, when seen tangentially, or a "halo" when seen *en face*. Equally important as a sign indicating malignancy, the niche itself must remain within the projected outline of the stomach. (Figure 2.)

Raggedness of walls and floor of the ulcer and irregular tumefaction about it point to malignancy, though occasionally these signs will fail.

Prepyloric location of an ulcer is reason for added suspicion of malignancy. Exceptional size has become somewhat discredited as an indication of malignancy. It is fair, however, to view the large



Figure 1.—Classical benign ulcer with radiating gastric folds.

* Read as a part of the panel discussion of diseases of the stomach before the section on General Medicine at the 76th Annual Session of the California Medical Association in Los Angeles, April 30-May 3, 1947.

ulcer with added suspicion. Ulcers on the greater curvature are usually carcinomatous, but may prove to be benign in spite of exceptionally ragged outlines.

One type of niche occurs in the center of tumors such as leiomyosarcoma or fibrosarcoma. These lesions usually produce a spheroidal tumor not materially deforming the adjacent stomach or impeding its peristalsis. The mass may grow externally and not encroach upon the stomach or do so only by an appearance of extragastric pressure, leaving intact rugae so that the central ulcer resembles a benign peptic one. (Figure 3.)

Isolated spheroidal lesions usually appear as negative shadows in a region of the stomach, otherwise unmodified as to contour, mucosal pattern, or peristaltic activity. These are usually benign tumors or polyps, although their present or eventual benignity is always a matter of doubt. (Figure 4.) Irregularity of contour of the mass or changes in the adjacent gastric wall are points for malignancy, as is a niche or button of central necrosis.

A *multilobular deformity* may be due to polyposis, carcinoma or sarcoma, particularly lymphosarcoma. Swollen, stiffened rugae of gastritis may give this appearance. The deformities of carcinoma are irregular and there is much stiffening of the stomach. Peristalsis is either absent or grossly impaired. Local lesions are seen which cannot be diagnosed prior to operation or to biopsy. Lymphosarcoma or reticulum cell sarcoma are not usually distinguishable from carcinoma but are apt to have greater flexibility.

The classical cobble-stone appearance of polyposis *en nappe* may be given by gastritis which subsides completely so that at later autopsy the stomach appears entirely normal.

Rugal enlargement and distortion may be local or generalized and present several diagnostic possibilities. General rugal enlargement as an indication of hypertrophic gastritis has been much discredited by gastroscopy. Coarse rugae seen by the radiologist may, on gastroscopic observation, be found to represent no recognizable disease or may, in fact, be associated with atrophic gastritis. Nevertheless they



Figure 2.—Ulcerative carcinoma. Partial meniscus sign lacking the negative shadow because of marked surrounding tumefaction but revealing the indispensable part that the floor of the ulcer lies within the projected contour of the stomach. The niche itself has the classical appearance of benign ulcer.

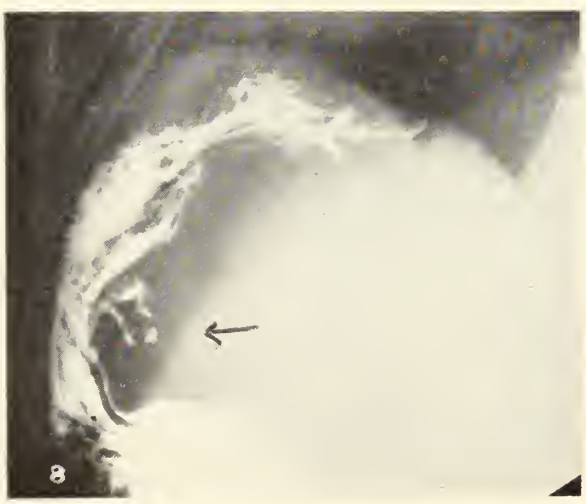


Figure 3.—Leiomyosarcoma, the main neoplastic mass giving the appearance of extragastric pressure. The central niche projects amid intact rugae, resembling benign ulcer.

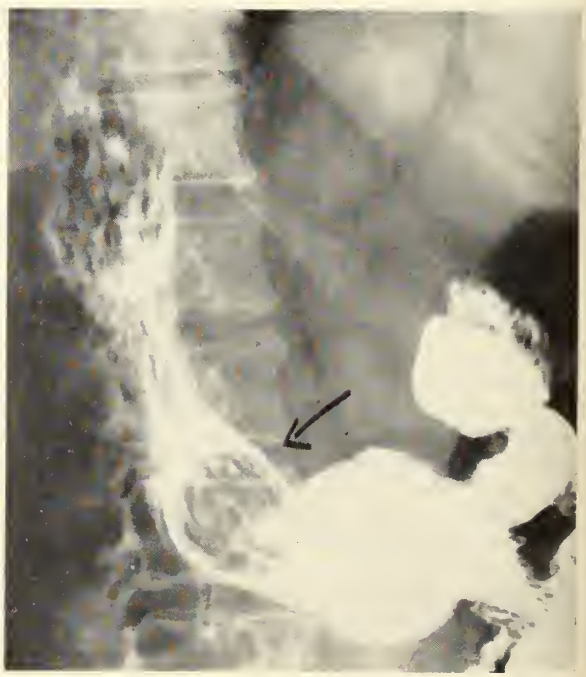


Figure 4.—Leiomyoma, spheroidal mass not impairing peristalsis, rugal pattern or gastric contour.

may represent gastritis. The rugae seen by the gastroscopist may be very different from those seen by the radiologist, since the two methods display them under different conditions of gastric distention.

Lymphosarcoma may spread submucously, producing an enlarged distorted rugal pattern with preservation of peristalsis and flexibility.

Multiple polyposis may present either a lobulate or rugose appearance or a combination of them.

Gastric retention may vary from a minor delay in emptying to that of true obstruction. The latter condition is represented by practically complete prolonged retention and dilation of the stomach.

The most frequent causes are duodenal ulcer, with scarring and stenosis, and carcinoma involving the pylorus. Pyloric and prepyloric spasm alone are infrequently sufficiently intense and persistent to cause true obstruction. Adhesions about the duodenum and pylorus have caused it. In one instance a minute ulcerated leiomyoma at the pylorus caused it, apparently by combined partial obstruction and intense spasm.

The cause of obstruction is frequently difficult to identify roentgenologically. Pyloric carcinoma may leave no recognizable defect. Sufficient barium may not enter the duodenum to outline ulcer. A thorough lavage campaign to clear the stomach and to reestablish better tonus are essential for useful study. Successful lavage may be difficult because of combined food and secretion and requires persistence.

The majority of instances of gastric retention are partial and result from an impairment of the active emptying mechanism, not truly obstructive. They frequently occur when the immediate emptying is rapid. Causes are numerous, in and out of the gastrointestinal tract. They include peptic ulcer, with or without frank pylorospasm; gastric carcinoma without obstruction; gastro-enterostomy, even when there is an adequate stoma; asthenia, and numerous reflex conditions.

Cole[3] contended that the duodenum was the pacemaker of gastric evacuation. Gershon-Cohen[4] recently has drawn similar more detailed conclusions from experimental study. Non-obstructive retentions call for renewed vigilance in gastro-intestinal examination but are not of great differential value. Proper respiratory excursion has a role in gastric emptying.[7] Paralysis of the left diaphragm may be associated with retention.

Prepyloric deformities are so frequent and confusing that they should be considered separately. These have been discussed regionally by Camp,[2] Stone and Ruggles,[10] Golden,[5] and by most texts on gastro-intestinal roentgenology.[6,11]

Causes for these deformities include ulcer with or without a frank niche, gastritis, spasm, benign tumor, polyposus, lymphosarcoma, and extrinsic pressure.

Whatever the type of these deformities differential points with regard to them include preservation, impairment or absence of peristalsis, rugal pattern and flexibility; presence or absence of palpable mass, and association with a normal or deformed duodenal bulb.

Gastric carcinoma in this region conventionally results in inflexibility, loss of mucosal pattern and of peristalsis and the presence of palpable mass, so that these associated findings, regardless of the type of deformity, usually make the diagnosis. With deviation from this, other diagnoses are to be considered, though carcinoma is not necessarily excluded.

The *prepyloric annular deformity* may be due to carcinoma, ulcer, spasm, gastritis, extrinsic pressure or syphilis. Rugal markings within the annular zone are frequently used to exclude carcinoma. However, some mucosa may remain undestroyed[2,5] (Figure 5). Further, the carcinoma may grow predominantly extra-gastrically, with some preservation of mucosal



Figure 5.—Carcinoma with partial preservation of mucosal pattern.



Figure 6.—Carcinoma, the growth predominantly to the lesser curvature side giving the appearance of extragastric pressure. Preservation of rugal pattern.

markings and an appearance of external pressure. (Figure 6.) Peristalsis may not be entirely obliterated, creating the impression of a benign lesion.[5]

Contrariwise in the presence of antral gastritis, the gastric wall may be thickened and stiffened by edema and infiltration impairing flexibility, peristalsis, and the mucosal relief.

Intense prepyloric spasm alone may produce annular constriction so persistent and marked that the region appears stiffened, and no mucosal relief or peristalsis is observed. Reexamination after lavage and antispasmodics may reveal the temporary character of the manifestation. The duodenum in such cases frequently reveals ulcer.

The peculiarly smooth prepyloric constriction of syphilis produces a rather characteristic appearance. That disease is relatively infrequent, however, and the diagnosis should be made with reservation.

A lobular encroachment upon the prepyloric lumen may be caused by polyps (Figure 7), benign tumors, carcinoma or rugal thickening of gastritis. In the presence of spasm, normal or nearly normal rugae in distorted arrangement may give a somewhat polypoid appearance, which observation with palpation will usually clarify. Flexibility and peristalsis are usually well maintained. Carcinoma partially or completely eliminates peristalsis and flexibility. Rugose types of gastritis may partially eliminate these also and may simulate carcinoma closely. Some medullary carcinomas may show surprising flexibility. Even tumors with preserved flexibility and peristalsis cannot be trusted to be or remain benign. Rugose enlargements which are highly flexible, particularly those which herniate through the pylorus with emptying peristaltic rush, are usually quite characteristic.

Irregularity of the surface of polypoid masses as elsewhere suggests malignancy, as do residual flecks of barium at their surfaces. This, however, may occur also in superficial ulcers on the surface of the gastric walls thickened by gastritis.

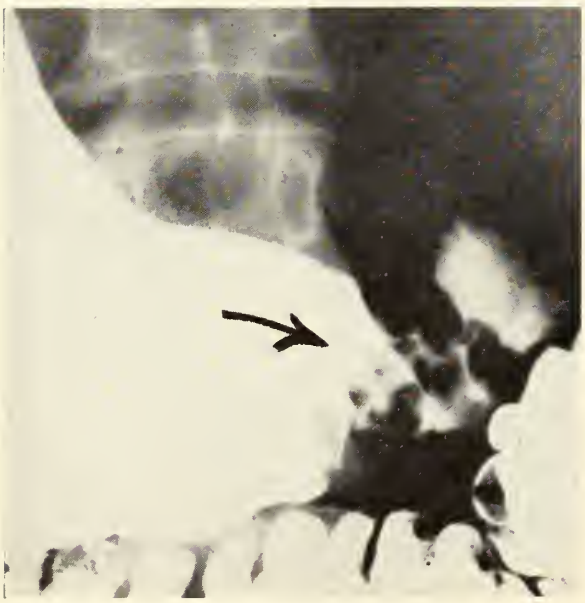


Figure 7.—Prepyloric multiple polyposus.



Figure 8.—Prepyloric gastritis and a shallow erosive ulcer. A plaque-like carcinoma 24 mm. diameter, 10 mm. thick overlaid by flattened but intact mucosa was in the body of the stomach. This might have escaped detection under most detailed examination but only by careful rugal study in this region could it have been recognized. The carcinoma is not evident on this film.

An eccentric relation of the narrowed prepylorus to the pylorus has varied causes. It may be due to eccentric growth of neoplasm or to extrinsic pressure. (Figure 6.) In either case the encroachment may be from the greater or lesser curvature side. It may be associated with a frank niche of ulcer.

The association of a frank niche to prepyloric deformity usually narrows the field to benign or carcinomatous ulcer.

Prepyloric deformity of spastic or gastritic type cannot lightly be assumed to be the primary lesion present. Careful examination of the remainder of the stomach, where obscure peptic ulcer or carcinoma may be present, is called for. Undue concentration of attention upon this region may result in failure to recognize an important lesion elsewhere. (Figure 8.) There may always be multiple lesions.

Deformity at the cardia may occur from carcinoma or from extragastric pressure. The rugal pattern in this region is particularly confused. A factor in this is the fact that frequently a significant length of the stomach lies beneath the diaphragm so that the pattern is one of multiple rugae projected tangentially one over another. Palpation is not available except indirectly. For this reason, ulcers in this region are particularly obscure. Carcinoma may produce frank intrusive mass or may result in diffuse constriction in which the rugal pattern persists at least partially. Observation of the shape and flexibility of the cardia by means of its air-bubble during respiration is of assistance. Kirklin has emphasized this and has also pointed out that the lesion may be suspected from a deformity of the stomach-bubble seen on roentgenograms of the chest. Extension of cardiac carcinoma into the distal end of the esophagus is common.

The foregoing is a partial description of some of the limitations of gastric roentgenology, with emphasis upon conditions in which findings are incon-

clusive. Means of decreasing this inconclusiveness need not be detailed here. They have been described and advocated by many authors. Painstaking and repeated examinations employing rugal and compression studies, observation in varied projections, often after lavage and antispasmodics, are indicated.

Sharp increases in the manpower and time available for such examinations are required. In high grade private practice of radiology and in strong university hospitals, such conditions are most nearly met. The radiologist cannot at the same time concentrate on examining the greatest possible number of cases and upon giving each the maximum of thoughtful attention. These two requirements are mutually exclusive.

Well trained radiologists are on the whole capable of performing the type of examination needed. Whether they will actually do so will depend upon whether a sufficient number of them are so employed, with adequate technical support and equipment.

The radiologist, having gone as far as possible, is then obligated to present and evaluate his evidence somewhat conservatively, drawing the warranted conclusions but not permitting his desire to make a definitive diagnosis to lead him to press his evidence to more definite conclusions than it actually supports.

Recognition of true early gastric carcinoma is a separate problem. It has been well stated by Abrahamson and Hinton [1] as the problem of recognizing presymptomatic cancer. This calls for laboriously done examinations on a mass survey plan and requires provision for far greater manpower and facilities than are now available, if there is to be a significant effect on the prognosis of cancer of the stomach.

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QUESTIONS AND ANSWERS

DR. CARTER: "What is the present status of clinical diagnosis of duodenitis, including x-ray findings?"

Insufficient numbers of cases come to pathologic proof to erect a clear clinical syndrome. One can assume there are rather non-specific symptoms such as might occur from gastro-intestinal disorders generally, particularly peptic ulcer.

Roentgenologically, Kirklin has described duodenitis critically and well. He has described changeable distortions of the duodenal bulb which were the crucial manifestation in duodenitis in contrast to the constant distortions of duodenal ulcer. His cases were pathologically proved by cellular infiltration in the duodenal walls. This was so critically done that he accepted only a limited number of cases as proved. Duodenitis is not used too freely as a diagnosis. Hypermotility and rapid emptying of the bulb can be responsible for erroneous diagnoses of duodenitis.

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Psychosomatic Considerations of Gastric Disease*

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THAT the program committee should see fit to ask a psychiatrist to participate in this symposium on stomach diseases is in itself heartening proof that present-day medical thinking on this subject is undergoing considerable mellowing. Or, have we just come to our wits' end in regard to the management of recurrent peptic ulcer so that we are now willing to listen to the less tangible (but I hope not less practical) psychiatric concepts concerning the disorders of gastric function?

As has so often been the practice, the psychiatrist is usually the last consultant to be called in when all the physical avenues of investigation and treatment have been pursued without permanent benefit, and the patient is, as a consequence, regarded as more or less "neurotic." There is no doubt that many individuals with chronic, recurrent stomach disorders are in a sense "neurotic," but let us examine the nature of their nervousness with a little more precision than is usually accorded such cases in routine clinical investigation. I should like, at the outset of this discussion, to point out that the psychosomatic approach to disease does not mean that one should study the "soma" any less, but rather study the "psyche" more.

It has been known for many years that emotional disturbances may bring about alterations in digestive function. Over a hundred years ago Beaumont [3] in his well known report of Alex St. Martin, a patient who lived with a gastric fistula until the age of 78, gave us our first important facts regarding the physiology of the stomach. Beaumont's interests were concerned mainly with the chemistry of gastric juice. Many years later, Pavlov,[5] the Russian physiologist, used the fistula technique in the study of gastric physiology in dogs, and showed experimentally the relationship between environmental situations and prolonged alterations in gastric function. Then came the important contributions of Cannon,[4] whose experimental studies demonstrated the effect which specific emotional factors, such as anger or fear, have on gastric function. Cannon contributed, more than anyone else, to present-day thinking on this subject and his ideas have provided us with a new approach in the field of gastro-enterology.

In light of present knowledge of psychodynamic mechanisms, we can no longer dismiss with the antiquated expression "nervous indigestion," patients who suffer with chronic gastric disorder. Those of us who during the war had an opportunity to observe soldiers before they went into combat, know well that empty feeling in the pit of the stomach, or the nausea and vomiting which accompanies the fear in such situations. This is no less true in civilian life, where the business man suffers from indigestion or anorexia during important conferences or when threatened with financial loss. In the home, the nervous housewife develops indigestion or constipation when worried over her children's illnesses or the thought of spring housecleaning. And even the child himself who is not getting along well with his teacher may have an attack of vomiting some morning just as he is about to leave for school. The stomach has, therefore, been referred to by many as the "sounding board of the emotions."

Despite the fact that this relationship between the emotional state and the stomach is so well known, it is remarkable what scant attention has been afforded this matter in the actual handling of gastric disorders by many practitioners and gastro-enterologists. Inadequate evaluation is made of the patient's personality and of the life situation in which the symptoms occur. The general practitioner does not have time for adequate investigation of the life situation. Placing the patient on the traditional ulcer diet and giving him a prescription for an antacid powder is quicker. Even though most doctors are cognizant that there is a large nervous element present, they often look upon this feature as secondary and as a consequence of the physical disorder. As Weiss and English [6] have emphasized "the average general practitioner accepts psychogenesis only abstractly and with vague understanding of the nature of mental mechanisms and the part they play in illness. He somehow feels that psychic factors in illness are not on the same scientific level with such procedures as gastric analyses, x-ray studies, etc."

In other words, it is well understood by many physicians and patients, too, that emotions may be a force that will produce disturbances in various parts of the gastro-intestinal tract, but beyond paying lip service to this concept very little is done about it. Even though the patient himself realizes that nervousness is an important factor in causing his gastric symptoms, he, too, is trained to believe that physical measures, diet and medication will adequately provide the answer to his problem. The general practitioner may even have a more subtle reason for pursuing his investigation along strict organic lines, for he may not know just exactly what he would do if the patient should request psychotherapy from him. Advice merely to avoid worry and strain and get plenty of rest, represents the extent of usual psychotherapy. I hope, in this brief discussion, to be able to give you a little better understanding of the connection between emotional problems and gastro-intestinal illness and touch upon a few practical, as

*Read as a part of the panel discussion of diseases of the stomach before the section on General Medicine at the 76th Annual Session of the California Medical Association in Los Angeles, April 30-May 3, 1947.

well as theoretical points regarding the psychotherapy of such cases.

DIAGNOSIS OF TYPE OF ULCER IMPORTANT

Before any system of therapy is inaugurated, one should accurately determine the exact type of peptic ulcer which is present. For example, it is important to distinguish between acute and chronic gastric ulcer. Even most competent internists and roentgenologists often cannot differentiate between a benign and malignant chronic gastric ulcer in questionable cases. The final diagnosis often rests on microscopic evidence. Until definite diagnosis between benign and malignant gastric ulcer can be made, the surgical approach is preferable to any conservative treatment, medical or psychotherapeutic. This does not apply, of course, to the management of simple, early uncomplicated gastric ulcers so frequently seen in young persons; such cases may therapeutically be placed in the same category as duodenal ulcer.

The problem of duodenal ulcer may, in general, be viewed more optimistically than gastric ulcer but even here, when the duodenal ulcer penetrates beneath the mucosa and becomes indolent and refractory to medical management, psychotherapy obviously does not provide an appropriate answer. The patients may have to be treated surgically first, and afterwards may be handled psychotherapeutically in hope of preventing the recurrence of ulcer.

Now let us consider some personality and emotional factors in ulcer patients. What kind of a person develops an ulcer?

Constitutionally, he has been described as a usually slender individual, with a narrow intercostal angle, a scaphoid abdomen, low-normal blood pressure, low-normal basal metabolic rate, hyperactive reflexes and an unstable autonomic nervous system.

Psychologically, the ulcer patient fits into a fairly constant pattern. He is a rather special type of individual from the point of view of his personality make-up. Almost invariably he is found to be a tense, enthusiastic, conscientious and more or less perfectionistic individual.

Alvarez [2] in his vast writings on this subject has repeatedly emphasized this personality pattern in relation to ulcer formation. Alvarez originally called attention to a certain type of individual who is particularly prone to develop peptic ulcer and described him as a keen, nervous, active, hard-living person, upon whom surgeons are reluctant to operate because of the danger of recurrence of ulcer. Alvarez felt that arterial spasm may be the mechanism which links emotions and ulcer formation and after much study of this problem concluded that most ulcers are due basically to emotional factors and increased nervous tension. He has gone far beyond the usual formulation which takes into account only the physical and clinical data concerning the patient. In more recent contributions Alexander [1] has defined the "gastric type" of individual along similar lines and described him also as overly-independent, active and conscientious.

I have stated that the stomach has been called the "sounding board of the emotions." This is understandable since it is so richly supplied with autonomic nerve fibres, both sympathetic and parasympathetic, which connect cortical and subcortical centers with the viscera. These neural pathways mediate the earliest infantile emotional responses, inasmuch as the pleasures of being fed are psychologically retained in the mind and stored there as unconscious memories. Later in life, and without awareness on the part of the individual, impluses may be sent out by way of the autonomic nervous system from cortical, subcortical, and hypothalamic centers which follow the same infantile pattern. And since no other bodily function has played such an important role in the emotional life of the individual from infancy as has eating, the problem of peptic ulcer becomes extremely interesting when studied from this point of view. If psychodynamic factors in the life cycle of peptic ulcer are considered in this light, then the time-honored method of treatment may surely be improved. If, for example, hyperacidity is due to emotional stimuli descending from the cortex, psychological prevention of such stimuli from reaching the duodenal and gastric mucosa may be just as important as chemical neutralization of the acidity.

It has long been appreciated that cortical influences affect the physiological activity of the stomach. The early observations of Beaumont, recently brought up to date and beautifully demonstrated by Wolff [7] and his co-workers, show clearly the effect of the emotions on the vascular, vasomotor and secretory functions of the upper digestive tract. The importance of the mediation of abnormal nervous influences upon the stomach is also demonstrated by the relief obtained by ulcer patients from the use of belladonna or other antispasmodic drugs which affect the parasympathetic nerve endings in the gastro-intestinal tract. The effect of surgical resection of the vagus nerve is further striking evidence of the influence of the autonomic nervous system upon gastric activity, and this procedure will be discussed in some of the following papers.

TYPE OF EMOTIONAL NEED IN RELATION TO ULCER

Not all of the great variety of stomach disorders which may arise from different kinds of emotional conflicts result in ulcer formation. But there is a rather specific and interesting correlation with certain types of emotional needs and situations. The specific condition seems, in the present state of our knowledge, to be the frustrations of needs for maternal love—using the term in a broad sense. In order to treat these patients effectively, it is necessary, therefore, to familiarize one's self with these emotional needs and to recognize the signs of their frustration.

I use the term "maternal love" in a very broad sense to cover one's needs for affection, emotional support, help from others. Everyone has these needs, though in varying amount. These may be expressed psychologically in direct or sublimated forms of gratification. Some people require their love in the form of direct human interest and affection, in sexual

or platonic form. Others crave a more sublimated expression such as the need for power, recognition or fame. In any event, the thought which I am trying to convey is that all these needs for adult comfort, love and pleasure are psychologically—because of early emotional patterns—associated with the infant's emotional response to feeding. In such individuals, when these basic needs are frustrated, so inseparable have they become from the physiological action of the stomach, that they automatically stimulate gastric contractions and secretions which, when sufficiently intense and prolonged, may lead to ulcer formation.

Please do not misconstrue what I have said here to mean that the phenomena of duodenal ulcer as an end result of a long series of tissue changes, can be explained psychologically. In other words, the ulcer itself has no psychological significance whatever. What can be interpreted as a direct effect of psychological factors are the disturbances in secretions, motor activity and vascular supply of the stomach.

We must realize that permanent cure of a peptic ulcer cannot be accomplished when unconscious emotional factors are operative, until these factors are psychologically evaluated and ultimately eradicated. The many recurrences of peptic ulcer may be ascribable to the failure of physicians to take these factors at face value. Symptomatic relief, whether obtained by medical or surgical means, is not enough. Psychiatric management, particularly during the quiescent intervals of the ulcer, should be carried out in combination with proper medical management. It is only through the pooling of our efforts, somatic and psychologic, that we can hope to bring about a more permanent cure of this condition.

Simply stated, the psychosomatic concept of ulcer formation may be summarized as follows:

1. Emotional stimuli produce disturbed function.

2. Disturbed function ultimately results in structural changes.

3. The symptomatic treatment of structural or pathologic change may be medical or surgical, but fundamental prevention depends on the normalization of the emotional status (psychotherapy).

SUMMARY

In summary, then, the treatment of the ulcer patient includes not only dietary measures and medications, but in addition careful attention to the psychologic needs of the individual. We must acquaint the patient with the fact that he is confronted with the problem of a chronic disease which has a frequent tendency to recur. We should not be satisfied with mere treating of the acute ulcer but must direct over-all treatment to prevent relapse after the ulcer has healed. In order to protect against future recurrences, it is of fundamental importance to understand the psychological mechanisms and background on which the ulcer appears. To do this we must treat the whole human being and not just the hole in his stomach.

450 Sutter Street.

QUESTIONS AND ANSWERS

Dr. Zelics: The first question I have is: "How can a general practitioner treat a peptic ulcer psychogenically?"

That is a pretty broad question. I shall try to answer it as briefly as I can.

I would say that the first important thing in treating the peptic ulcer patient is, as Dr. Hoffman emphasizes, to take time and get a really good history, not just of the ulcer iself, but a history of the whole life situation of the patient, before and during the time in which the ulcer has occurred. In other words, obtain a psychosomatic history and really get to know the patient. As Dr. Althausen has emphasized, oftimes relatively simple problems in the patient's life will be uncovered, which you can solve yourself. If, however, you are faced with an individual with deep-seated psychoneurosis, then that patient, just as the surgical case is referred to the surgeon, should be referred to the psychiatrist for major psychotherapy.

The next question is: "What is the relation of spastic colitis and peptic ulcer patient, especially in young men and women?"

There is an interesting similarity between the personality patterns of patients with ulcer and those with spastic colitis. Psychologically, both represent types which are basically dependent. The conscious reaction to this basic (unconscious) dependency is a high degree of conscientiousness and a need to be overly-independent. It appears from the studies of Alexander that ulcer patients seem to have a greater need to "receive" whereas the patients with spastic colitis have a greater need to "give."

Question: "What is the relationship of the psychosomatic aspects of peptic ulcer and the higher incidence of recurrence in the spring and fall?"

I am afraid I cannot answer that, I shall defer to any of the other speakers who may be informed on that point. . . . (No response).

Moderator Snell: The answer, I think, is that nobody knows. It does happen, and there is no valid explanation.

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Medical Treatment versus Prevention of Peptic Ulcer*

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THE present handling of the problem of peptic ulcer is unsatisfactory. This is attested by the eagerness with which both physicians and victims of the disease greet the announcement of every newly proposed remedy. In order to avoid confusion and to appraise this problem in the proper perspective it is necessary to distinguish between the treatment of the individual acute ulcer episode and the measures designed to combat the tendency to recurrent ulcers.

The present methods for treatment of uncomplicated ulcer as used in the leading clinics are effective in producing prompt relief and in healing the ulcer in a matter of weeks in over 90 per cent of the cases. For this reason there is no room for radical improvement so far as results of treatment in the individual attack of ulcer are concerned. When difficulties arise it is usually from failure to apply the well known methods of therapy on the part of the physician or from lack of cooperation on the part of the patient.

The therapeutic research in peptic ulcer during the past two decades has dealt chiefly with new antacid remedies (magnesium trisilicate, aluminum hydroxide and phosphate, polyamine-formaldehyde resin), with biological products which reduce gastric secretion (enterogastrone and urogastrone), with substances which counteract peptic activity (saponins), and with substitutes of milk for frequent feedings (milk tablets, gelatin, amino-acids†). These efforts are very welcome because their results contribute to the more efficient therapy of some cases of ulcer that are "intractable" on the classical regimen and because some of them obviate certain inconveniences of this regimen to patients during the early weeks of treatment. On the other hand, their importance is limited by the facts that less than 10 per cent of uncomplicated cases of peptic ulcer are "intractable" and that it is not inconvenience of the treatment that gives rise to the general dissatisfaction. It must be clearly understood that none of the old or new therapeutic methods employed in medicine go beyond the treatment of the current ulcer episode, with the possible exception of an as yet unidentified experimental substance contained in "enterogastrone-concentrate" described by Greengard, Atkinson, Grossman and Ivy. Surgical operations for treatment and prevention of peptic ulcer are discussed in another paper of this panel discussion.

The classical ulcer treatment was originated by Sippy in 1912. Three years later his first results were published, indicating successful healing of the ulcer in 85 per cent of cases. Since then various relatively unimportant modifications of this treatment have been introduced. The most significant of these is the use of insoluble or relatively insoluble antacids. The routine treatment of uncomplicated peptic ulcer at the University of California Gastro-intestinal Clinic is carried out under ambulatory conditions. During the first week the diet is limited to a milk and cream mixture taken every two hours with antacid powders one hour after the mixture. Sedative and antispasmodic medication is administered three times a day. During the second week this schedule is continued with the addition of certain foods only if complete relief from pain has been achieved during the first week. These additions consist of eggs, cottage cheese, white bread, potatoes, macaroni, rice, oatmeal and cream of wheat at meal times. Sugar, salt and butter are also allowed. During the first two weeks of treatment great emphasis is placed on the regularity of food intake and antacid medication (not more than five minutes before or after the hour). Beginning with the third week, cooked fruits and pureed vegetables are added and the punctuality of the schedule is relaxed. Gradual additions to the diet are made with less frequent administration of milk until, in the average case, the patient is on a general diet three months after beginning of treatment. All medication is carried out for at least four months and antacids are continued for at least six months from beginning of treatment.

If complete relief from pain is not obtained during the first week, rest from work, bed rest at home or in the hospital, nocturnal intragastric drip of aluminum hydroxide (Winkelstein), and psychotherapy are prescribed as dictated by circumstances.

There is an unfortunate tendency among many physicians to think that the described or kindred modification of the Sippy diet are too strict to be practical for most of their patients with peptic ulcer. This is true even of some of those who had opportunity to observe the excellent immediate results of this type of treatment in their senior year in medical school and during their internship. As a result compromises are made going all the way to the vague advice to "drink a lot of milk" and the administration of antacids limited to three times a day. In the first place, such compromises increase the number of patients who fail to respond to medical therapy. These patients, are, therefore, labeled "intractable" and subjected to surgical operations. In the second place, inadequate treatment may bring about a state in which the patient loses his pain entirely or partially while activity in the ulcer continues in a latent form.

* Read as a part of the panel discussion of diseases of the stomach before the section on General Medicine at the 76th Annual Session of the California Medical Association in Los Angeles, April 30-May 3, 1947.

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† Essentially predigested milk protein.

This is especially true of individuals who are hyposensitive to pain. Crohn has shown that the proportion of such individuals among patients with peptic ulcer is about three times greater than in the general population, so that this characteristic applies to a majority of ulcer patients. It is difficult to determine exactly how often such a state of latent activity occurs in a given series of patients under treatment. Frequent roentgenologic checks are helpful, but not altogether conclusive and, unfortunately, expensive. Probably the most generally applicable criterion of the incidence of latent activity in ulcers under treatment is the number of patients experiencing a return of pain during the later stages of the ulcer regimen or soon after cessation of treatment in the absence of known "inciting" causes of recurrences. Such patients are often classified as having "spontaneous" recurrences.

The tendency of patients who have had one episode of peptic ulcer to have subsequent episodes is very great. Eusterman and Balfour observed among private patients at the Mayo Clinic that five-year cures were obtained in about 50 per cent of cases "provided that the conditions were favorable and the therapeutic regime adequate." St. John and Flood reported a recurrence rate of 65 per cent among clinic patients in New York who were followed for two years. This rose to 78 per cent in their patients who were followed for five years. Crohn reported recurrences of peptic ulcer among "about 60 per cent" of his ward hospital patients in five years and among "over 70 per cent" of them in ten years. Bockus, speaking of a private practice, stated that he had less than 10 per cent of recurrences in six months and 50 per cent of recurrences in five years "unless special care was taken." Raimondi and Collen reported that in an industrial contract practice they observed 66 per cent of recurrences in one year and 83 per cent of recurrences in two years. From the data supplied by Holland and Logan on recurrences of peptic ulcer in patients followed for up to 20 years, it appears that, when patients with gastric ulcer remained free from recurrences for five years, they could be considered as virtually cured. On the contrary, patients with duodenal ulcer were subject to recurrences even after having remained well for periods between 15 and 20 years.

From these figures and the excellent immediate results with medical therapy it is clear that the chief unsolved problem confronting the medical profession in connection with peptic ulcer in general, and the much more common duodenal ulcer in particular, is not the healing of the current ulcer episode but the prevention of recurrences. This is true regardless of the type of medical practice, whether private, clinic or contract. The rate of recurrences of peptic ulcer seems to be somewhat lower in private patients, but it is difficult to say whether this is due to a greater ability or willingness to observe precautions on the part of this class of patient, or to better opportunities of consulting different physicians for subsequent recurrences.

Before discussing a program for the prevention of ulcer recurrences it is necessary for purposes of orientation to review the chief known "inciting" causes of such recurrences. From the figures furnished by Emery and Monroe's follow-up study of 1,279 patients with recurrent peptic ulcer, it can be calculated that, of the recurrences for which a cause could be assigned, 42 per cent were due to fatigue, 32 per cent to emotional disturbances, 21 per cent to infections predominantly of the upper respiratory tract, and 5 per cent to indiscretion in diet. From a similar study of 350 patients, Jankelson found that relapses were caused by: dietary errors, 30 per cent; mental or physical strain, 24 per cent; seasonal, 19 per cent; infections, 15 per cent; drugs, 2 per cent; trauma, 1 per cent; unclassified, 9 per cent.

INCITING CAUSES OF RECURRENCES

From these data which are supported by the experience of every physician dealing with peptic ulcer patients, it is clear that the important known "inciting" causes of recurrences are: physical or mental fatigue, emotional disturbances, dietary indiscretions, and respiratory infections. In dealing with the causes of ulcer recurrences from the prophylactic point of view, it is obvious that at present the only practical medical approach is education of the patient. It is here that the physician often fails the patient by neglecting to inform him of the true nature and probable future course of his disease if proper precautions are not observed indefinitely.

Before embarking on such a far reaching educational campaign, it is essential in each case to establish firmly the diagnosis of peptic ulcer in order not to place an unfair burden on the patient and, as a secondary consideration, not to waste the physician's time. The diagnosis of peptic ulcer should not be lightly made, and preferably positive roentgenologic evidence should be obtained in each case. Least of all should the term "ulcers" be used as a cliche to satisfy an inquisitive patient with indigestion of undetermined origin. Also excessive reliance should not be placed on the roentgenologic examination alone, especially if it is not performed by a competent full-time radiologist. Old scarring of the duodenum, coarse rugae or extrinsic pressure may produce a roentgenologic appearance suggestive of ulcer. Correlation with the psychic make-up of the patient, the clinical history and the physical examination—especially the presence of a sharply circumscribed tenderness over the duodenum—is very important.

In dealing with ulcer patients and especially in trying to persuade them to observe certain precautionary measures for a period of many years, if not for the rest of their lives, it is necessary to take into account their personality. The typical patient with a peptic ulcer is a tense, ambitious, meticulous, overconscientious person who minimizes his pain, in contrast to the usual psychoneurotic or hypochondriac patient who habitually exaggerates his symptoms. The ulcer patient often neglects his treatment because it interferes with his work, unless the physician makes a determined effort to enlist the patient's cooperation by explaining to him the essentials of the ulcer prob-

lem. After this is done many patients are converted to a meticulous observance, not only of the immediate therapeutic regimen, but also of the long range prophylactic measures. It is also worthy of note that the tensions of most ulcer patients, as is pointed out by Lion, are associated with an occupational predicament or, less frequently, with other objective difficulties of a domestic or financial nature. For this reason the physician should inform himself particularly about the nature of the patient's work, his ambitions, his working hours and surroundings, how his evenings and week-ends are spent, whether the patient takes any vacations and what he does with them. The family relations, financial affairs, and any other matters which may be close to the patient's heart should be explored for possible sources of tension.

At the time the diagnosis is discussed with an often over-anxious patient it may be necessary to reassure him, especially if he fears that the ulcer "will turn into a cancer." Since the large majority of peptic ulcers are duodenal in location, fortunately one can be very emphatic in denying this possibility in these cases. To patients with gastric ulcers the precautions to rule out the threat of cancer by repeated roentgenologic examination should be explained. Later the patient must be informed frankly that peptic ulcer is, as so well defined by Jones, "a chronic, incurable disease characterized by ulceration of the stomach or duodenum and subject to intermittent relief from symptoms, as well as to unpredictable, or frequently predictable recurrences. A condition which, while capable of being handled during acute phases, does not respond to treatment in such a manner as to provide a complete and lasting cure. Complete cures . . . are the rare exception; recurrences are the rule."

Having imparted to the patient a general understanding of the problem of peptic ulcer, including a brief mention of the common complications of stenosis, hemorrhage and perforation, the physician can proceed to a discussion of practical preventive measures as they apply to the individual circumstances of the case. The patient's work predicament, if any, is discussed and its importance pointed out. It is often possible for the physician to make constructive suggestions on how to lighten the occupational burden. In extreme cases a change of occupation may have to be advised. Emotional disturbances involving family or financial matters or other frustrations should be tactfully inquired into. If such troubles are present, an effort should be made to solve them, or, when this is impossible, an attempt should be made to inculcate in the patient a more detached attitude toward his difficulties. In major cases it is necessary to enlist the services of a psychiatrist. The importance of moderation in eating is then taken up. The strictness of instructions in this direction depends on the amount of permanent scarring in the duodenum, on the degree of residual hyperacidity and hypermotility, and on the estimate of the patient's tendency to discount medical advice. It is of great advantage if the patient can be induced to abandon the use of coffee, tobacco and alcohol. However, compromises in these respects are often advisable, lest by insisting on excessively strict measures (from the patient point of view), he is prejudiced against the whole program of preventing recurrences. Finally the patient should be impressed with the importance of taking care of colds. Most important are regular measurements of temperature during respiratory infections with bed rest for the duration of the febrile period if any, and warning against excessive use of medication containing aspirin.

During periods of unavoidable fatigue or emotional stress the patient must be instructed to go on a protective diet eliminating coarse and irritating foods, and to resume medication with antacid, antispasmodic and sedative preparations of which he should keep a supply at home for such contingency. In addition to these precautions the patient should be prepared to handle any recurrence of ulcer pain by going promptly on the first stage of the strict ulcer diet and reporting at once to his physician. In case of rapid disappearance of symptoms an abbreviated course of treatment limited to one month is permissible at the discretion of the physician.

The instruction of the patient regarding the nature of his disease and the "inciting" causes of recurrences should be carried out systematically during each visit and summarized at the time of discharge from the care of his physician. In addition it is a good practice to supply the patient with a printed list of precautions which he is to read over once a month.

SUMMARY

1. *Adequate* medical treatment of uncomplicated peptic ulcer produces prompt relief and early healing of the current ulcer in over 90 per cent of cases.

2. Failure of the physician to insist on a strict and sustained regimen decreases the percentage of successful cases and results in early recurrences.

3. Medical treatment, *per se*, at present contributes nothing toward prevention of recurrences which are so frequent in all types of medical practice that, with few exceptions, peptic ulcer should be considered an incurable disease which must be kept under control by appropriate measures.

4. Recurrences of peptic ulcer are associated with four main "inciting" causes: Physical and mental fatigue, emotional disturbances, dietary indiscretions and respiratory infections.

5. In addition to prescribing an adequate regimen, the physician has a threefold duty toward the ulcer patient: to instruct him in the true nature of his disease, to convince him of the necessity of long continued preventive measures, and to assist him in readjusting his life for the purpose of avoiding tension.

6. In the event of recurrence of ulcer pain the patient should be prepared to resume at once the strict diet and medications, and report to his physician.

QUESTIONS AND ANSWERS

DR. ALTHAUSEN: The first question asks for comment on protein hydrolysate in the treatment of peptic ulcer.

Protein hydrolysate is essentially pre-digested milk pro-

tein, only in more concentrated form. For that reason it has certain advantages when the patient is in a poor stage of nutrition, because it provides him with more protein, especially during the first week. However, it cannot be used for patients who are allergically sensitive to milk, because they are also allergically sensitive to the casein hydrolysate, since the hydrolysis is never complete.

The second question is: "In your experience, do intramuscular injections of liver extract increase the amount of red cells following hemorrhage?"

I think if we are dealing with large hemorrhage, the blood should be replaced by transfusion. If there is continuous bleeding in small amounts over a long period of time, then liver extracts, together with iron—I should place iron first in importance—would be advantageous. On the other hand, in a single hemorrhage, which is not too great, I think the patients recover just about as rapidly without supplementary treatment, such as liver extract and iron, as with such treatment.

The next question is: "Would a daily use of amino acids in milk tend to prevent a recurrence?"

Amino acids in milk are sometimes given, but in ordinary interval feedings I do not think it would be necessary. Plain milk would probably serve the same purpose. On the other hand, it is rather difficult to get patients who have no symptoms to adhere to a five or six meal regime. The whole difficulty with patients who have recurring ulcers is that they are often not willing to observe precautions when they are free of symptoms. There is something in them that rebels against treating themselves as invalids.

The next question is: "Do you place patients with 'duodenitis' or 'duodenal erosions' in the same category as those with a solitary peptic ulcer in regard to treatment and etiology?"

Yes. I think that people with duodenitis, who can be defined as patients who have essentially the ulcer type of symptoms but during an x-ray examination show irritation of the duodenal caps rather than any direct or indirect evidence of ulcer, belong in the peptic ulcer category, but have not progressed as far on the road to ulcer as patients who have a frank ulcer. They usually have hypersecretion of gastric acid, and the same emotional problems or overwork. So the treatment is the same as for frank ulcer, and it is very effective. However, I don't try to educate these patients as rigidly as I do patients with actual ulcer. Individuals do not develop an ulcer, no matter what their physical or psychological state, unless they have some unknown predisposing factor. I think that people with duodenitis have this "X" factor to a lesser degree, because I have followed a number of patients with duodenitis for some ten or fifteen years, without their ever developing an actual ulcer demonstrable roentgenographically.

One of my patients with duodenitis was assigned during the war to a little tanker that supplied gasoline to outlying Navy bases in the Pacific. This tanker was not considered of sufficient importance to be provided with a destroyer escort so it went unescorted into Japanese-infested waters, and on several occasions was shelled by enemy submarines. My patient had a recurrence of his duodenitis but even under these conditions, he did not develop an actual ulcer.

Another question is: "What is your explanation of the life-long recurrences of duodenal ulcers in contrast to the relatively few recurrences of gastric ulcer after a five-year cure?"

I don't know. We see very few gastric ulcers, and I was interested in the statistics published by Holland and Logan. Perhaps Dr. Snell could shed some light on this question.

The last question is: "Do you believe an injection treatment for ulcer to be of any value, other than psychological? If not, is it justified in any case? If so, why not give plain saline, which would be cheaper?"

I suppose this refers particularly to the injection of histidine monohydrochloride, which was advocated at one time for the treatment of peptic ulcer. One member of our staff tried it about 12 or 15 years ago on a series of patients, and found that the percentage of failures was very much greater than with the standard type of medical treatment.

Greengard et al. are working on an as yet unidentified substance contained in "enterogastrone-concentrate" which is given by injection and they have reported favorable results in the treatment of peptic ulcer. At present this treatment is still in the experimental stage. It requires several injections a week which are apt to be painful so that the place of injection has to be changed frequently. These workers had no recurrences during a limited period of observation but the treatment is more drastic than observing some of the precautions I tried to indicate here this morning.

Moderator Snell: Thank you, Dr. Althausen. I regret that I can cast no light on the question of why there are more five-year cures in gastric ulcers than there are in duodenal ulcers. Perhaps benign gastric ulcer is a psychic phenomena, a periodic disease.

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Vagus Resection for Peptic Ulcer*

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On reviewing the history of the treatment of peptic ulcer one is impressed with three facts; first, that in the evolution of medical and surgical treatment there have been many changes denoting dissatisfaction with the results of both forms of treatment; second, that thus far the complete section of both vagus nerves in the properly selected cases has yielded by far the best results in patients selected for surgical treatment of ulcers; and, finally, that certain lesions should be treated either by resection or gastro-enterostomy along with section of the vagus nerves.

Allen [1] states that 20 per cent of peptic ulcer patients do poorly under the physician's non-operative management, that about half of these (10 per cent under treatment) develop hemorrhage, perforation or cicatricial obstruction requiring surgical intervention, and Allen and Welch [2] estimate that the remaining 10 per cent are "medical failures."

Qvigstad and Romcke [15] report that in cases where ulcers were of less than five years' duration, patients with gastric ulcer were symptom-free after three years' treatment in 50 per cent of the cases, while in patients with duodenal ulcer 40 per cent were free of symptoms after three years of treatment. On the other hand, if the duration of the ulcers was more than five years, only 25 per cent of the patients with gastric and duodenal ulcers were symptom-free after three years of medical treatment. Furthermore, they stated that when the ulcer had been present more than five years, 14 per cent of the patients with gastric ulcer were symptom-free after eight years of observation and only 7.6 per cent of the patients with duodenal ulcer of over five years' duration were without symptoms at the end of the eight-year period. The shorter the duration of the disease, the greater the chance of a permanent cure with conservative treatment. The age factor appears to be an important consideration, for they (Qvigstad and Romcke) had 15 patients with duodenal ulcer under 20 years of age, none of whom were free of symptoms after eight years of observation, and of 56 patients in the third decade only five (9 per cent) were free of symptoms after eight years of observation. They concluded that diet treatment was not helpful in young patients and advocated surgical therapy in this group. Interestingly too, they concluded that ulcers larger than one cm. in diameter were cured by medical treatment twice as often as the smaller ulcers.

A review of the physiologic effects of complete section of both vagus nerves to the stomach convinces one that many of the failures of the surgical treatment of peptic ulcer were obviously due to the application of a non-physiological, if not destructive, operation which frequently left the patient worse than he had been before operation. For years clinicians have recognized the relationship of exacerbation of ulcer symptoms during periods of "stress" and have observed the great benefit derived as the result of the release from these events by the immediate improvement of symptoms. Frequent references have been made in the literature to the banker, lawyer or the doctor who always left his ulcer symptoms at home when he went on a fishing trip or a vacation. Cushing [6] observed duodenal ulcers associated with certain types of brain lesions.

Pavlov [14] after sectioning both vagus nerves observed the loss of gastric secretion to sham feeding and conditioned reflexes suggesting that the vagus nerves are the main pathway of impulses from the cerebrum to the stomach. However, it was for Carlson [4] to point out that in man and animal there is a continuous secretion of gastric juice normally, even in prolonged fasting, presumably due to a "persistent secretory tonus in the vagi, the production of secretogogues through the auto digestion of the gastric juice, the endogenous production of histamine-like substances or a combination of these factors." The articles of Dragstedt and his co-workers [7,8,16] and of Moore [12,13] admirably relate the history and surgical background leading up to the application of bilateral vagus section in the treatment of peptic ulcer.

Physiological Effects of Bilateral Vagus Resection

Dragstedt [16] has observed both in dogs and in humans having had bilateral vagus resection certain changes in the secretions of the gastric juice:

1. *The continuous or night secretion of gastric juice.* Twelve-hour night secretions were collected after the stomach was emptied by lavage in eight patients with duodenal ulcer and two with gastric ulcer. It was noted that the volume secretion after the vagus section decreased to 335 cc. from an average of 821 cc., and the free acidity fell to 15 units from an average of 47 units preoperatively. This indicated that ulcer patients have an abnormally large continuous secretion of acid gastric juices in the absence of stimulation or psychic factors during the night and while fasting and that this appears to be due to the secretory tonus of the vagus nerve and is reduced to normal values by complete vagus section. Incomplete section of all the fibers of the vagus nerves will not yield these results.

2. *The gastric secretory response to histamine before and after vagus section.* Histamine stimulation produced the same abundant secretions of gastric

* Read as a part of the panel discussion of diseases of the stomach before the section on General Medicine at the 76th Annual Session of the California Medical Association in Los Angeles, April 30-May 3, 1947.

juice in 19 patients both before and after vagus section and there was no diminution either in the volume or in the free acidity after the vagus section. This indicates that histamine acts on the peripheral neuroglandular apparatus or directly on the secreting cells themselves and *not* by way of the vagus nerves.

3. *The gastric secretory response of ulcer patients to caffeine before and after section of the vagus nerves.* Caffeine elicits a secretion of gastric juice similar in quality to that produced by histamine. Its effect is not abolished by atropine. The stimulation was the same before and after operation but there was not so great a secretory response as with histamine.

4. *Gastric secretory response of ulcer patients to insulin hypoglycemia before and after section of the vagus nerve.* Insulin in large enough amounts to produce hypoglycemia increased the secretion of gastric juice and this change appeared to be due to stimulation of the gastric secretory fibers of the vagi, for section of these nerves or the administration of atropine abolished this effect. The use of insulin hypoglycemia as a method of testing the integrity and secretory function of the vagus nerves to the stomach has been advocated by Ihre,[11] Babkin[3] and Hollander.[10] Thornton and his co-workers[16] carried out fractional insulin gastric analysis, withdrawing samples of gastric juice at ten-minute intervals following the administration of 20 units of crystalline insulin subcutaneously in fasting patients. There was a response to the test in 15 of the 17 patients, with a production of hypoglycemia and an increase both in the amount and free acidity of the gastric juice, although this was not as marked as the response with histamine. There was no response to insulin following vagotomy.

5. *Sham feeding* produced an increase in the volume and the acidity of the gastric juice in three of ten patients preoperatively and in none postoperatively. Various psychic factors were given as a possible cause of the failure to respond to this true conditioned reflex mediated through the vagus nerves in what should be the most effective method of testing the excitability of the vagus secretory fibers in patients with ulcer.

6. *The motility of the empty stomach of ulcer patients before and after section of the vagus nerves.* The empty stomach of the patient with ulcer usually reveals hypertonicity and hypermotility with exaggerated hunger contractions. After bilateral vagotomy, tonicity and motility return to normal.

Dragstedt and his co-workers[7,8,16] concluded that fasting patients with ulcer have an excessive continuous secretion of gastric juice of a higher acid content than normal, and that since complete division of the vagus nerves to the stomach reduces this secretion, it must be due to excessive secretory tonus in the vagus nerves of central origin. Further they concluded that the excessive motility of the stomach in many patients with ulcer returns to normal after bilateral vagus section, indicating that there exists a hypertonus of the motor augmentor fibers in the vagi. Both *excessive secretion* and *hypermotility* operate together to produce an ulcer and hinder healing, but Dragstedt believes the hypersecretion is the more important of the two factors, even though both are reduced by vagus section. The experiments indicate that the increased volume and acidity of the continuous night gastric secretion in ulcer patients is the greatest departure from the normal, and this is greatest in young patients with duodenal ulcer presenting signs of nervous tension and instability. Therefore he concluded that the determination of the night secretion is the most valuable of the gastric secretory tests from the standpoint of diagnosis and prognosis. He has shown in his study that patients with hypersecretion are particularly prone to develop secondary stomal ulcers following gastro-enterostomy, gastroduodenostomy and partial gastric resection, and that these ulcers respond favorably to complete bilateral vagus section. He states that since insulin hypoglycemia produces vigorous gastric secretion by stimulation of gastric secretory fibers in the vagus nerves, and that since this is abolished by complete vagus section, the test is invaluable to determine whether the vagus section is complete. The decreased volume and acidity of the gastric juice and the abolished insulin effect has remained effective over a period of two years or more of observation in the patients studied by him, and the ulcers remain healed. It would appear that the immediate relief of pain and the early healing of the ulcer has been effective and lasting by virtue of the abolition of the impulses from the cortex to the stomach by way of the vagus nerves. The secretory changes tend to return toward normal in six to twelve months, although a reduction in the acidity and a slight increase in the Ph value of the gastric secretions remains. Gastric motility returns to normal or near normal levels by the end of one year after operation. Gastric atony is gone in three to nine months, though some delay in the pyloric emptying may remain even after that time.

INDICATIONS FOR VAGUS RESECTION

The ideal indications for vagotomy appear to be in those patients who have had previous surgical procedures for peptic ulcer, such as pyloroplasty, gastrojejunostomy or gastric resection, followed by renewed ulceration. Previous operation does not contraindicate vagus section which, unless there is evidence of obstruction or delayed emptying, usually results in the relief of symptoms and healing of the ulceration.

An even larger group of patients in whom a complete vagus section is indicated according to Dragstedt[7,8] and Moore[12,13] are young and middle-aged patients with a long history of peptic ulcer, possibly with previous perforations or hemorrhages, unobstructed and not acutely bleeding, who have been refractory to careful medical treatment and who have severe ulcer pains in times of stress, which can be relieved transiently by the usual antacid, milk or food. The operation is contraindicated in acute perforation, acute massive hemorrhage or advanced cicatricial obstruction. The history of bleeding in

the past is no contraindication to complete vagus resection.

Side effects which have developed in approximately 10 per cent of the cases operated upon by vagus section include gastric immobility, distention and diarrhea. The majority of patients will not develop gastric distention if the Levine tube is left in the stomach for four days after operation and the stomach is kept empty, and if, when the patient begins eating, his meals are small and frequent. Early ambulation is helpful. According to Moore [13] practically all patients have a normal sized stomach in from three to nine months following vagotomy. Diarrhea is a transient complaint. It usually appears in a few days after operation and is self limited. In none of the patients has it been physically depleting.

In Moore's [12,13] and by Grimson's [9] cases, and in the great majority of those in Dragstedt's [8] earlier series, vagus section was done by the transthoracic approach. They believed that a more complete vagus resection could be accomplished by the supradiaphragmatic transthoracic section of the vagi than through an abdominal subdiaphragmatic section. More recently, in presentations in Los Angeles, Dragstedt stated that he now favors the subdiaphragmatic transabdominal approach and believes he can accomplish just as complete bilateral vagus sections with this operation as he could with a transthoracic supradiaphragmatic exposure of the vagi. The abdominal approach, he believes, affords the advantage of an exploration of each lesion and avoids intercostal neuralgia which sometimes follow transthoracic operation. Crile [5] more recently stated that at the Cleveland Clinic the subdiaphragmatic resection of the vagus nerves has largely supplanted the transthoracic approach because it enabled the surgeon to explore the abdomen and, if necessary, simultaneously to perform an operation to prevent gastric retention. We believe the transpleural approach is indicated in the following types of cases.

1. Patients who have a recurrence of ulceration after pyloroplasty, gastro-enterostomy or gastric resection and who have already been explored and who have no obvious obstruction or retention.

2. Young patients with duodenal ulcer with recent hemorrhage and without much deformity and without gastric retention.

3. Patients with lesions which are located high on the lesser curvature of the stomach within two inches of the esophageal opening, which might necessitate a total gastrectomy. Vagotomy would be a safer operation than sub-total resection of the stomach in the presence of edema and inflammation. Total gastrectomy might be considered too heroic. Careful biweekly barium study of such lesions should be made postoperatively, and if there is failure of the "ulcer" to heal in four to six weeks, exploration and perhaps total gastrectomy would be indicated. Lesions in this position are difficult to diagnose with certainty either by gastroscope or by roentgenograms, and not infrequently the surgeon is uncertain of the diagnosis at the time of exploration. However, it may still be justifiable to wait a month after vagus resection to ascertain that the benign ulcer is healing or a malignancy is progressing.

Transabdominal subdiaphragmatic vagus resections are indicated in the following types of lesions.

1. Prepyloric ulcers and chronic ulcers on the lesser curvature of the stomach. (15 per cent of such cases are malignant or potentially malignant.) Partial gastrectomy with removal of the lesion should be carried out.

2. Duodenal ulcer with a long history (five to ten years) with many recurrent and repeated attacks of pain and bleeding and with considerable deformity of the duodenum. In such cases, gastro-enterostomy or gastric resection may be indicated along with the vagotomy.

TECHNIQUE

The various techniques of bilateral vagus section for treatment of peptic ulcer have been described by Dragstedt,[7,8,16] Moore [12,13] and Crile.[5] There have been no serious surgical complications such as empyema, persistent pneumothorax, atelectasis or cardiospasm.

END RESULTS OF VAGUS SECTION

In the original series of Dragstedt [7] in 1945, he reported persistent relief of ulcer distress, gain in weight with roentgenographic evidence of healing of the ulcers uniformly in 30 patients with duodenal ulcers, in two with gastric ulcers and in seven with gastrojejunal ulcers. Moore [13] reported 33 cases, and in all except one patient the ulcers had healed. Grimson [9] reported 18 cases, all having healed ulcer in several weeks after their operation. Crile,[5] in 32 subdiaphragmatic and six transthoracic vagus sections, reported all free of symptoms with healed lesions. The results have been uniformly excellent in various clinics.

SUMMARY

1. Bilateral complete sectioning of the vagus nerves advocated by Dragstedt for the treatment of refractory peptic ulcers offers a new surgical approach to a problem heretofore beset with disappointing results from both medical and surgical treatment.

2. Actually there should exist no controversy over the advantages of the supradiaphragmatic transpleural vagotomy and those of the transabdominal subdiaphragmatic vagus section, for each has its role in the treatment of peptic ulcers.

3. The indications for the transpleural and transabdominal vagus sections are outlined and their specific advantages mentioned. The surgeon should be guided in his approach by the nature of the lesion in each individual patient.

427 S. Arden Boulevard.

QUESTIONS AND ANSWERS

DR. JONES: "What treatment for delayed gastric emptying three months post-vagotomy?"

Perhaps Dr. Snell can tell us more about the acetylcholine derivative used in the treatment of delayed emptying of the stomach.

Of course, if the patient is badly off, he may have to have gastro-enterostomy. It must be remembered that some of

these patients do not have a normal emptying time of their stomach eight months after nerve resection nor even after a year. They get along very well in many instances, and if the delayed emptying time is only a pathological finding and the patient clinically is doing well, then I should say that he should not have a gastro-enterostomy.

Question: "What dietary regime after vagotomy?"

The diet should be liberal. The important thing about vagotomy post-operatively is not what the patient eats, but how much he eats and how frequently. In other words, if he overloads his stomach soon after operation, he is going to have trouble. It is not a matter of putting him on an ulcer diet and keeping him on an ulcer diet. It is a matter of regulating him so that the stomach will empty what he eats. He should not be allowed to have large meals and to lie around in bed afterward.

Question: "What effect does vagotomy have on a patient with hypertension?"

None that I know of.

Question: "Should vagotomy be done at the same time as the ulcer operation?"

I would say that the vagotomy ought to be done when the surgery is done on the stomach or duodenum. There is no necessity in waiting to see if you are going to need a vagotomy. I think it ought to be done at the same time that the operation is done on the stomach.

Question: "Why not a combined trans-thoracic and trans-abdominal?"

I don't know if that question refers to Moore's work. You are probably well acquainted with his work. In almost all his cases he has done trans-thoracic vagotomies, but he strips the vagus nerve from the root of the lung down to the diaphragm, and then he opens the hiatus and resects the nerves on down in the proximal part of the stomach through a trans-thoracic approach. I don't know whether you mean that that should be combined; whether it is necessary that you should do it both in the thorax and in the proximal stomach. I don't think it is necessary, because, after all, if the vagus nerves are identified, and if they are resected in the thorax, it isn't necessary to carry them down along the stomach itself.

I have never seen a recurrent laryngeal nerve that has been cut that regenerated. So, I don't think that you need to worry about regeneration in these cases.

Question: "What effect, if any, is vagotomy likely to have on the liver and gallbladder functions?"

I should let Dr. Snell answer that. I don't believe there is any effect at all. He may have some idea on it.

Question: "Are any clinical or laboratory observations available on this matter of liver and gallbladder function after bilateral vagotomy?"

I know of none. I will pass that back to the Moderator.

Moderator Snell: Thank you, Dr. Jones. I am afraid the Moderator cannot answer that one either. I don't believe there is any information available, but the matter has been discussed and it is generally believed that there is no demonstrable effect on either cholecystic or lymphatic functions, at least to date.

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Congestive Splenomegaly (Banti's Syndrome) Due to Portal Stenosis

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SINCE Banti [1] in 1894 first described the disease that bears his name, there has been considerable material published, both confirming and refuting the existence of this complex. Is it an etiological entity or merely a symptom of portal obstruction and portal hypertension?

In Banti's original description, the syndrome is characterized by hypochromic anemia with leukopenia, splenomegaly, late onset of hepatic cirrhosis, and death from gastric hemorrhages. Such a clinical picture has been described in early stages or clinical variants of tuberculosis,[17] syphilis,[11,25] Hodgkin's disease,[25] malaria and leishmaniasis [18] involving the spleen, as well as in other (Table 1) conditions. It would seem, therefore, that the clinical diagnosis of Banti's disease is hazardous. Likewise, an anatomical diagnosis based on the surgically removed spleen is uncertain, if not impossible.

TABLE 1.—*Etiological Factors Involved in Cases of Congestive Splenomegaly (Banti's Disease)*

A. Obstructive Factors (Portal Hypertension).
1. Portal cirrhosis (50 per cent)
2. Schistosomal cirrhosis
3. Syphilitic cirrhosis
4. Portal thrombosis
5. Splenic thrombosis
6. Cavernous transformation of portal vein
7. Portal stenosis
8. Primary carcinoma of the liver (with cirrhosis)
9. Patent umbilical veins with excessive portal flow
10. Hyperplasia of the liver and liver veins
11. Obstruction of the portal veins from without

B. Non-Obstructive Idiopathic Splenomegaly (Banti's)?

The spleen of Banti's disease is described as being greatly enlarged, firm and congested. Perisplenitis is common. Microscopically the sinusoids are congested and lined with cuboidal littoral cells. The pulp cords are relatively acellular with an increase in reticulum cells and collagen. Malpighian bodies are small. Some central arteries are surrounded by fresh hemorrhage, siderotic nodules or an increase in fibrous tissue, depending upon the age of the individual lesion. The arteries may show some hyaline changes. The veins are dilated and may show intimal changes.[15]

In none of those conditions, however, do the spleens of Banti's disease enjoy a monopoly. Siderotic nodules as well as the other changes have also been described in spleens of hemolytic jaundice, syphilis, atrophic cirrhosis of the liver, portal thrombosis, other portal venous obstructions, leukemia, Hodgkin's disease and sickle cell anemia.[8]

Using the microscopic lesions described in Banti's disease, grading of spleens to obtain a numerical value by which a diagnosis of Banti's splenic anemia could be made has been found to be unsatisfactory.[6] Surgically removed spleens in cirrhosis of the liver with splenomegaly, with or without anemia, are generally indistinguishable from those of splenic anemia.[14]

CASE REPORT

A 15 month old female infant was admitted to the Children's Hospital in 1942 with swelling of the abdomen and pallor. At birth the child was said to have had a large abdomen, and this had increased recently along with an increasing pallor. There was no history of jaundice.

Physical examination: The patient was a pale infant with markedly distended abdomen and marked venous collateral circulation over the chest and upper abdomen. Paracentesis yielded 1200 cc. of a yellow transudate. The liver was then just palpable and the spleen was felt half way to the umbilicus. Blood counts revealed severe hypochromic anemia (hemoglobin 23 per cent of 17.5 grams, red blood count 2.25 million). The leucocyte count was 6,800 with 40 per cent neutrophils, 47 per cent lymphocytes, 10 per cent monocytes, two eosinophils and one basophil.

When the child was 18 months old, an exploratory laparotomy showed a firm, gray spleen which was twice normal size, but no other extraordinary condition was noted. A liver biopsy showed large, pale staining liver cells with a granular "washed-out" appearance to the cytoplasm. There was no evidence of cirrhosis, and the portal triads in general showed no microscopic abnormalities. The ascites subsided slowly following the operation and the anemia responded to transfusions and iron therapy.

When seen again at the age of three years, the child showed no ascites or anemia. The liver was 2 cm. below the right costal margin and the spleen reached the level of the umbilicus. Many dilated veins were present over the abdomen and lower thorax. Roentgenograms showed esophageal varices. Icterus index, Van den Bergh, plasma proteins and glucose tolerance tests did not reveal any evidences of functional liver disturbance.

Three months later the child was again admitted to the hospital because of vomiting blood and died two days later.

Autopsy (three hours postmortem): Positive findings: External examination showed a pale, four year old child with distended veins over the anterior thorax and upper abdomen. The omentum was adherent to the anterior margin of the right hepatic lobe and the fibrous adhesions binding it down were extremely vascular. There were many blood vessels connecting the omentum with the surface of the liver in these adhesions.

Before the organs were removed, the portal system was injected through the splenic vein with a radio-opaque substance*. This was done by tying a small cannula into the vein and injecting from a syringe, using gentle pressure. An x-ray was then taken. (Figure 1.)

The gross autopsy examination showed a narrowing of the portal vein to about 2 mm. in circumference at a point 2 cm. above its origin. This narrowing occurred abruptly within a distance of 5 mm. from the original large diameter of the

From the Pathology Department, Children's Hospital, Los Angeles.

* Pantopaque, supplied through the courtesy of Dr. William H. Strain of the Eastman Kodak Company.

vessel. No structures pressing on the vein from the outside were noted. No apparent thickening of the wall was evident. The intimal surfaces were smooth and pale throughout. This narrow vessel branched into two similarly narrow hepatic branches, each of which did not exceed 2 mm. in circumference at the point where they entered the liver.

The superior mesenteric and splenic veins were greatly dilated. There was a small pedunculated thrombus in the right renal vein about two-thirds of the diameter of the vein itself. The gastric coronary veins were dilated and one large and several smaller submucosal varices were present. The stomach contained large amounts of clotted and fluid blood. The esophagus showed one large and several smaller submucosal varices. A small rupture of one of them was present in the lower third of the esophagus.

The liver weighed 375 grams. (Normal weight for this age 516 grams.) It was small, firm, mottled with yellow and showed no definite lobular pattern.

The spleen was greatly enlarged (approximately three times normal). There were areas of fibrous thickening of the capsule. The pulp was firm and showed numerous fine white strands of fibrous tissue. Malpighian bodies were ill-defined.

Microscopic examination: Liver: There was no increase in periportal connective tissue. The liver cells were perhaps a little smaller than usual, and many of them in central areas contained small fatty vacuoles. The central veins were negative.

Spleen: There was focal hyalinized fibrous tissue proliferation of the capsule. Trabeculae were numerous, large and hyalinized. There was an increase of connective tissue in the pulp. Sinusoids were dilated and lined by pale cuboidal cells. Lymph follicles showed large germinal centers in which occasional hyaline deposits were present. Slight peri-arterial fibrosis was frequently seen in the smaller arteries. No fresh hemorrhages or "siderotic nodules" were present.

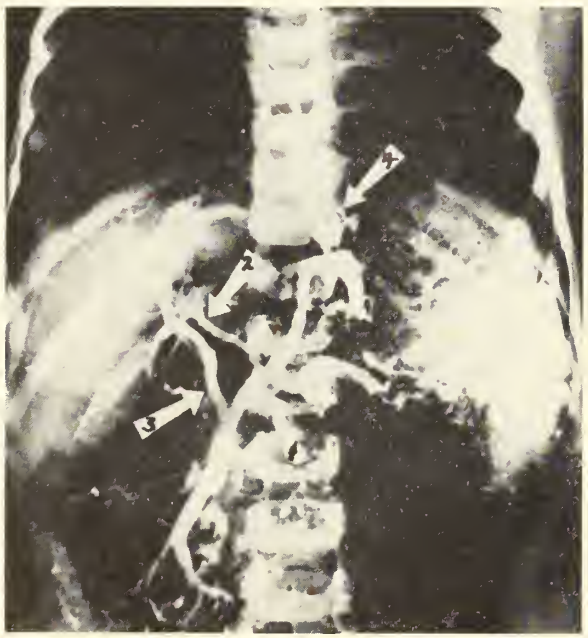


Figure 1.—Portal system of patient after injection of pantopaque. The splenic and mesenteric veins are greatly dilated until they join (1) to form the portal vein (2) which is markedly narrowed. This leads into small hepatic branches. The portal vein is only a third or a quarter the diameter of its tributaries. A large vein (3) arises from the mesenteric vein and traverses the omentum to where the latter is adherent to the liver. This represents the spontaneous omentopexy following the surgery and probably explains the clinical improvement at that time. Regurgitation from the gastric coronary vein into the esophageal varices is seen (4).



Figure 2.—Normal portal system of child of same age. Arrow indicates Portal Vein.

Final Anatomical Diagnosis: Stenosis of portal vein, congenital; Esophageal varices with rupture and massive hemorrhage; Splenomegaly, with fibrosis of spleen; Chronic perisplenitis; Focal atrophy, liver; Fibrous adhesions, perihepatic, omental; Ball thrombus, right renal vein.

DISCUSSION

When a diagnosis of Banti's syndrome can be made from combined clinical and pathological evidence, the problem of etiology is encountered.

There are two views: One, that Banti's disease as an entity exists in the absence of portal obstruction and the other, that Banti's syndrome is an aftermath of portal hypertension. Followers of the latter idea prefer to label the condition "Congestive Splenomegaly."

The most impressive arguments advanced by those in favor of Banti's disease *per se* are based on experimental studies. Complete, partial, intermittent and progressive closure of the portal vein have failed to produce either the microscopic picture or the degree of splenomegaly seen in humans in Banti's disease.[15,16]

In experimental liver damage, a spleen which is dissociated from the portal system and transplanted into the subcutaneous tissues undergoes hyperplasia. The conclusion drawn from these experiments is that splenomegaly in Banti's disease is due to some "hepatoxic" agent plus portal hypertension.[5] Injection of silica particles into the portal vein has resulted in portal cirrhosis with marked splenomegaly.[19] Some doubt has been cast on the validity of this procedure because of the presence of a few silica particles in the spleen. Unpublished work reporting satisfactory production of chronic portal obstruction with spleno-

megaly by using cellophane bands around the portal vein has been quoted.[24] Improvement of patients following splenectomy has been interpreted as being due to the removal of "toxins," but it seems more likely that the 30 per cent reduction in portal flow caused by removal of the splenic circulation is the real basis for the remissions. Improvement of our patient after the exploratory operation is thought to be due to the development of the omental-hepatic adhesions in which large vessels developed. This might also explain the atrophic liver with absence of cirrhosis.

Those who favor the obstructive factor as the etiology believe the changes occurring are due to portal hypertension. Seventy per cent of cases of Banti's syndrome have demonstrable portal obstruction and many of the remainder are not sufficiently investigated to rule out a portal block.[20] Measurements of splenic vein pressure in cases of Banti's syndrome at surgery show a significant increase as compared to control cases.[21,22] No such measurements were made in our case.

Portal cirrhosis of the liver accounts for 50 per cent of the cases of the congestive splenomegaly. The presence of portal hypertension and subsequent congestive splenomegaly with a Banti's syndrome, in cases of cirrhosis, depend on the degree of narrowing of the portal vein radicals within the liver. This is not necessarily related to the severity of the cirrhosis;[7,9] a fact which explains the inconsistency of Banti's syndrome in cirrhosis. When portal hypertension exists, Banti's syndrome is nearly always present.[12] Extrahepatic portal blocks also are associated with Banti's syndrome (Table 1). The clinical picture and the pathology they produce, except for evidences of liver damage are usually indistinguishable from the cirrhotic group.

It is therefore, becoming increasingly more evident that the clinical and pathological findings associated with Banti's syndrome are results of diverse etiological factors causing portal obstruction and hypertension. A small percentage of cases in which portal blocks have not been found will probably remain, especially in that group not receiving postmortem study, or in those in which at postmortem the portal system is not carefully examined. These fall at present, for want of a better terminology, into the group of so-called "idiopathic splenomegaly of Banti."

The case reported here would undoubtedly have been included in this group had not permission for autopsy been obtained. The diagnosis from the etiological standpoint was obscure both clinically and surgically. It could easily have been overlooked at autopsy.

The diagnosis "Banti's disease," therefore, leads one to a therapeutic blind alley. Splenectomy is curative only in the rare case where the splenic vein alone is obstructed, and it affords only temporary relief in others. The recognition of portal obstruction as the basic etiology has resulted in the use of portal-caval venous shunts to circumvent the obstruction. Although there have not been sufficient follow-ups on patients undergoing this surgery, results to date are encouraging.[2]

SUMMARY

A review of the more important evidence for and against the existence of "Banti's disease" (congestive splenomegaly) leads to the conclusion that most, if not all, cases are based on portal obstruction with portal hypertension. A case of congestive splenomegaly due to congenital stenosis of the portal vein is presented with the autopsy findings.

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Pentothal Interview in the Treatment of Chronic Alcoholism

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DURING the past 50 years there has been a gradual increase in the use of psychobiochemical drugs in the treatment of the mentally ill. As early as 1882 Griesinger described beneficial results following the induction of deep sleep. In 1901 Wolfe reported the results obtained from the use of trional.

Real impetus was given to this type of treatment when in 1930 Bleckwenn [2,3,4] introduced sodium amytal in the treatment of neuropsychiatric disorders. He first used the drug intravenously to produce rest and sleep in disturbed psychotic cases. He noted that under its influence patients demonstrated normal lucid intervals with spontaneous speech even in protracted cases of catatonic dementia praecox.

J. S. Horsley [7] in 1936 introduced the term narcoanalysis to describe the proeedure of using intravenous barbiturates for the purpose of conducting psychiatric interviews with patients in variable stages of narcosis. He used small doses of fast acting barbiturates to produce a state of relaxation with heightened suggestibilities and in this state he found the patient would discuss more freely his mental conflicts.

Sullivan [14] and Morris [12] also report on the use of sodium amytal as a psychotherapeutic agent. Sullivan concluded "Sodium amytal is a valuable diagnostic and therapeutic agent in psychiatry meriting more usage than given." Morris reports the rapid removal of conversion symptoms with the use of intravenous barbiturates combined with psychotherapy in the form of reassurance, suggestion, rational explanation and education. He also found it valuable in the differential diagnosis of malingering from conversion hysteria.

Evipan has also been used for similar purposes. The technique as administered by Stungo [13] in 1941 is similar to that employed in the use of sodium amytal. He believes this drug also provided a useful and rapid method of investigating suspected neuroses.

The use of sodium pentothal in the treatment of chronic alcoholism was begun hy the author in April 1941. The idea was conceived as a result of observing the unconscious speech of patients who had been given pentothal anesthetie. At the time it was thought to be original. but a review of the literature diselosed that sodium pentothal had been used previously in treating certain psychiatric conditions. However, no extensive work where it has been used exclusively in the treatment of chronic alcoholism has as yet come to our attention.

During the recent war pentothal was widely used in the treatment of war neurosis. Grinker and Spiegal [6] reported good results from its use in these cases encountered in the northwest African theatre. They employed it for narcosynthesis and for what they term "narcosythesis." They report that "under the influence of the drug and the work of the therapist there occurs a dosed release of intense repressed emotions in quantities small enough so that the weakened or broken ego, strengthened by the therapist, resumes its appraising and rationalizing functions." They also feel that it enahles the therapist to more accurately estimate the amount of repressed anxiety.

As early as 1942 Wilde [20] described the use of pentothal hypnosis in the treatment of war neurosis. Besides being valuahle in treating hysteria, anxiety states, and the after effeets of injuries to the head and spine, he also found it useful as a diagnostic aid in horderline psyehosis, mental deficiency and epilepsy. He believes pentothal hypnosis is a rapid and safe method of psychotherapy. Wilbur [19] prefers the "ultra-short-aeting" barbiturates, sodium pentothal and sodium thioethamyl beeause reeovery is so rapid and a hetter control of the depth of narcosis can be maintained.

Primarily our use of pentothal interview in the treatment of chronie alcoholism has been and probably will continue to be, as an adjunct in a more comprehensive treatment program. The hulwark of this program is the conditioned reflex therapy as described by Voegtlin [15,16,17] and Lemere, et al.[8,9,10,11] This program includes establishment of a conditioned reflex aversion to all types of alcoholic beverages and the careful follow-up of the patient for at least a year following the initial treatment. This follow-up care includes reinforcement of the initial aversion hy subsequent single conditioning seances and a rehahilitation program aimed at the rehabilitation of the patient from a marital, social and occupational standpoint.

This does not mean, however, that pentothal interview will not play an important part in the treatment of eertain cases. According to our present concept it can be useful in treating the aleoholic, first as a diagnostic aid and, second, as an aid to psychotherapy in selected cases. We believe that it is of considerable value as an aid to diagnosis and we use it in the following way. The patient is admitted to the sanitarium for treatment of chronic alcoholism. If he is intoxieated the acute phase of his alcoholism is treated first. When he is mentally clear an initial interview is held with the patient during which his history is obtained. Usually this history is corroborated by a relative or friend. If this history reveals the patient belongs in one of six groups which we have arbitrarily set up as constituting a criterion for comprehensive therapy, he is given pentothal inter-

From the Shadel Sanitarium, Seattle.

view. These groups, some of which have been previously described by Lemere, are as follows:

1. All patients under 30 years of age. We have found this group of patients to respond poorly to conditioned reflex therapy alone.
2. Patients with a criminal or psychotic history.
3. Patients who have relapsed twice following conditioning therapy with rehabilitation.
4. Those patients whose history is suggestive of constitutional psychopathic personalities.
5. Those patients commonly classed in the inadequate personality group.
6. Those patients not fitting into any of the other groups for whom we believe additional help will be necessary in order for them to maintain total abstinence. This includes recently returned veterans who have had a large amount of combat experience and those having a difficult time adjusting to civilian life.

 It also includes those patients whose lives have become extremely difficult because of hardships, such as female alcoholics in the menopause who have suffered some severe psychic trauma. For example, loss of a husband, a son or similar tragedy. Recently this type of case has become quite common.

If a considerable amount of traumatic material or conflict is found in the first pentothal interview it may be repeated one or more times or until an accurate appraisal of the patient's personality, psychic make-up and psychotherapeutic needs can be made. The technique of conducting the pentothal interview which we employ is as follows:

The patient is placed in bed in a comfortable position and the arm is fastened to an arm board. One and a half grams of sodium pentothal is mixed in two hundred cubic centimeters of sterile distilled water. This solution is mixed in a standard intravenous bottle to which is connected a regulation intravenous tubing, with a Murphy-drip attachment. The needle is then inserted into the basilic vein and the solution is started. The rate of flow is easily controlled by means of a set screw applied to the tubing. Twenty to forty drops a minute usually maintains a satisfactory depth of narcosis. The therapist is seated near the patient's head so that the chin may be elevated if the narcosis should become too deep. One-half to one gram of pentothal is all that is usually required to conduct a two-hour interview. The reserve quantity of solution is merely an insurance against disturbing the continuity of the interview. In our hands this technique of administration has proven very satisfactory. We believe it offers an excellent means of controlling the depth of narcosis and we have had no undesirable effects from its administration in this manner.

Some of the advantages of the procedure as a diagnostic aid are that it facilitates taking a very complete personality history. For this purpose we have compiled a lengthy and rather detailed analytical questionnaire which quite thoroughly covers not only the patient's drinking history but also his early childhood, adolescence, marital history, sexual development, financial and occupational status and many other factors. In this manner the time element is greatly reduced. This is of an economic importance for many patients and of advantage in those institutions where the number of admissions makes the more time-consuming type of psychiatric analysis impossible from a practical standpoint.

From a psychotherapeutic aspect, treatment, of course, is directed toward the goal of maintaining permanent and complete abstinence. As pointed out by Voegtlin [18] the majority of cases automatically adjust to their environment if sobriety can be maintained. When the initial pentothal interview reveals traumatic or conflict material in the above mentioned groups of patients, psychotherapy is begun. It is started during the interview and is carried on at frequent conferences for a period of at least one year, the purpose being to assist the patient in adjusting to his more difficult problems, and to enable him to face reality and still maintain total abstinence.

We have found pentothal to be helpful in the conduct of this therapy in several different ways. The alcoholic is frequently a very sensitive individual. Under the narcosis of pentothal he lends himself more readily to a careful, thorough and unrationalized developmental history. A positive transference is frequently made in a very short time. Under pentothal there has also been noticed a marked release of inhibitions and a lowering of psychic resistances. Also the free discussion of conflict material while gradually allowing the patient to awaken is beneficial to the establishment of insight in certain types of problems.

HYPNOTIC SUGGESTION

Hypnotic suggestion is also utilized and we believe it to be worthwhile in these cases. This is particularly true in treatment of alcoholic cases, if the hypnotic suggestion is employed in the manner Erickson [5] believes it should be. He states: "Successful hypnotic psychotherapy should be systematically directed to re-education of the patient, a development of insight into the nature of his problems and the promotion of his earnest desires to readjust himself to the realities of life and the problems confronting him." Altman,[1] in 1943 also laid particular stress on the role which suggestion plays in the use of any hypnotic drug as an adjuvant to psychotherapy.

Table 1 shows the results obtained by pentothal interview alone or in combination with other types of therapy. A total of 35 patients are reported. A much larger series is not reported because sufficient time has not elapsed since treatment. However, the patients of this group have been observed long enough to warrant a review of the results. It should be stated that these patients were selected as being the most difficult cases found in a series of nearly 4,000 chronic alcoholics. Previously, they were regarded as hopeless cases having failed to respond to other types of intensive therapy. The idea of this selection was that if any results could be obtained with pentothal interview in this group of unfavorable patients we might expect even better results in a more desir-

able type of patient. These patients also represent the experimental phase of the treatment and much improvement has been made in the manner of administration as well as in the method of handling them. The results in more recent cases have led us to hope that this improvement will be evident in future statistical evaluation. It should be explained that patients who resumed drinking even for a short period of time are classed as relapses even though six of the seventeen reported as relapsed have since become totally abstinent. Their periods of sobriety, however, have not been adequate to consider them as "cured."

Group 1 represents patients who had received conditioned reflex therapy with rehabilitation twice previously and had relapsed after both treatments. They were admitted to the sanitarium and were given pentothal interview and psychotherapy with follow-up conferences. No conditioned reflex therapy was administered to this group during this treatment period. There are nine patients in this group; four (44.4 per cent) have remained abstinent. The average period of total abstinence which had been maintained by these successful patients when the analysis was taken was 18 months.

Group 2 represents patients who received pentothal interview with psychotherapy in addition to conditioned reflex therapy as an initial treatment. The results in this group were not good. However, it should be pointed out that they were a very poor type of patient and were the most severe type of alcoholic. Formerly the patients in this group would not have been accepted for treatment because of the hopeless prognosis. Three had long criminal histories and one was admitted in an acute psychotic state. There are seven patients in this group: three (42.8 per cent) have remained abstinent. The average period of total abstinence which had been maintained by these successful patients when the analysis was taken was 12 months.

Group 3 shows patients who had relapsed following one treatment with conditioned reflex therapy. They were readmitted and given pentothal interview with psychotherapy and also conditioned reflex therapy. This group contains five psychopathic personalities out of a total of eight patients. Four (50 per cent) have remained abstinent. The average period of total abstinence which had been maintained by these successful patients when the analysis was taken was eight months.

Group 4 is similar to Group 3 except that the patients of this group had relapsed two or more times following conditioned reflex therapy previous to their admission for this treatment. There are 11 patients in this group. Seven (63.6 per cent) have remained abstinent. The 63.6 per cent of success in this group is immeasurably better than we had been able to obtain by merely conditioning the patients a third time. The average period of total abstinence which had been maintained by these successful patients when the analysis was taken was 11 months.

The fact that conditioning procedures did not apparently play a major role in this group of patients, as is evidenced by the fact that patients did nearly as well without conditioning as with it, should not be construed as meaning that conditioning is of little value in other types of cases—for this group consists entirely of patients who have either already demonstrated that they were not susceptible to conditioning (because they had already relapsed twice) or else belonged to a class which Lemere has already indicated as being unsuitable for conditioned reflex therapy alone.

The pratice of giving relapsed patients pentothal and psychotherapy alone, as a rountine procedure, was abandoned, however for several reasons: First, we believe the sincere patient should he given every advantage possihle in order to help him overcome his illness. Second, we believe that the conditioned reflex is of advantage to these patients suffering from psychiatric disorders in that it assists them in maintaining sobriety during the periods when they are trying to adjust themselves satisfactorily to their environments.

SUMMARY

A discussion of the use of pentothal interview in the treatment of 35 cases of chronic alcoholism over the period of the last five years is presented. These cases were selected from a series of nearly 4,000 cases of chronic alcoholism because they were the

TABLE 1.—*Results Obtained by Pentothal Interview Alone or in Combination with Other Types of Therapy.*

Type of Treatment	Number of Patients	Relapsed	Abstinent	Percentage of Abstinence	Average Length of Abstinence When Analysis Taken
Group 1. Pentothal interview and psychotherapy *only*. This group had relapsed following two conditioned reflex treatments	9	5	4	44.4%	18 mo.
Group 2. Pentothal interview with psychotherapy plus conditioned reflex therapy on *initial* treatment	7	4	3	42.8%	12 mo.
Group 3. Pentothal plus conditioned reflex therapy on patients who had relapsed after one conditioned reflex treatment	8	4	4	50%	8 mo.
Group 4. Pentothal plus conditioned reflex therapy on patients who had relapsed following two or more conditioned reflex treatments	11	4	7	63.6%	11 mo.
Total	35	17	18	51.4%	

most difficult type and previously would have been regarded as practically hopeless.

In our opinion pentothal interview is of value as an aid to diagnosis in the treating of chronic alcoholic addicts. Its use in the production of a state of narcosis during which psychotherapy is administered in the form of hypnotic suggestion, re-education, and narcosynthesis offers promise as an adjunct in the treatment of selected cases of chronic alcoholism. From experience it is believed to be of value in assisting the physician in obtaining a more complete psychiatric history through the use of an analytical questionnaire. In doing this it is beneficial in helping to conserve time both for the physician and the patient which is an economic advantage.

Definite conclusions cannot be drawn from a series of this length but the results obtained have been encouraging and, we believe, warrant further more extensive clinical investigations. which are being currently made.

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California Cancer Commission Studies*
Chapter VIII

Malignant Lymphoma

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THE terms malignant lymphoma or malignant lymphoblastoma are generally used to designate malignant disease of lymphoid tissues. In common usage these are spoken of as lymphosarcoma, leukemia, and Hodgkin's Disease. The nomenclature otherwise is unfortunately highly varied, controversial, and confusing.

Detailed classifications are necessarily those based largely on morphology and are among the trade tools of the pathologist. Such classifications are in a general way of value in estimation of prognosis and radiation sensitivity. Gall and Mallory [1] who have made one of the most exhaustive modern studies of the subject offer a morphologic classification based on a study of some 600 cases. This is readily applicable to clinical use and has sound histologic and clinical correlation. The classification is tabulated below along with the terms of more common usage as a reference for the individual who might encounter some of the less familiar terms:

Malignant Lymphoma (Classification of Gall and Mallory)	Various terms commonly used.
A. Stem cell lymphoma	Lymphosarcoma group; including reticulum cell sarcoma and monocytic reticuloendotheliosis.
B. Clasmatocytic lymphoma	
C. Lymphoblastic lymphoma	Lymphosarcoma, Lymphatic leukemia (acute and chronic)
D. Lymphocytic lymphoma	
E. Follicular lymphoma	Lymphosarcoma, giant follicle type, Brill-Symmers' Disease
F. Hodgkin's lymphoma	Hodgkin's Disease
G. Hodgkin's sarcoma	

The authors of this classification emphasize the fact that leukemia of lymphatic type is of incidental occurrence in malignant lymphomatous disease and that lymph node morphology does not differentiate between lymphosarcoma and lymphatic leukemia. Hematologic leukemic manifestations have been observed in all types of malignancies of lymphoid tissues.

The cause or causes of this group of diseases are unknown. Theories and observations related to their origins are numerous.

GENERAL CLINICAL OBSERVATION

The symptoms which may bring the patient to a doctor are many and varied.

The onset of disease of this type is usually insidious. The process may be present in hematologically diagnosable form before there is objective or subjective evidence that anything may be amiss. This is illustrated infrequently in individuals undergoing periodic physical examination or elective surgery, where a routine blood count reveals the presence of leukemia.

Painless swelling of the easily observed superficial lymph nodes is the most common early symptom of the entire malignant lymphoma group. In some cases, the secondary effect of expansive growth of deep lymph nodes may first call attention to the presence of the disease. Enlargement of mediastinal or bronchial lymph nodes may cause bronchial compression with resultant cough. The development of abdominal masses due to either splenic enlargement or mesenteric adenopathy is relatively frequent. Tumor masses originating in the lymphoid tissues of the stomach or intestine may cause mechanical obstructive symptoms or may produce ulceration of the overlying mucosa with resultant hematemesis or melena.

As a result of involvement of bone marrow, there is usually a decrease in the number of blood platelets so that hemorrhagic signs may appear. Sudden purpuric manifestations unrelated to or disproportionate to trauma are relatively frequent. Severe bleeding following tooth extraction or other minor surgery may occur. Epistaxis or unusual uterine bleeding may be the first indication of disease. Weakness or asthenia are frequent early symptoms which are, in part, related to anemia.

Unexplained fever is a frequent early finding in the malignant lymphomata. Indeed, all of the patient's early symptoms may suggest a low grade infection. Vague aching and pain in the extremities may be one of the subjective symptoms.

The general findings may give all of the clinical indications of the toxemia of tuberculosis. There is frequently unexplained weight loss.

Occasional patients have an initial complaint of generalized pruritis.

* Organized by the Editorial Committee of the California Cancer Commission.

CORRECTION:

Dr. John M. Kenney, whose article, "Childhood Cancer," appeared in this section of the November issue of California Medicine, is practicing in Santa Rosa, California, not in Sonoma as the signature line on the article indicated.

As previously indicated, leukemia of lymphatic type is not differentiated by lymph node morphology. The hematologic observation of leukemia is a variable phenomenon in the group of the malignant lymphomata, being observed most frequently in the lymphocytic lymphoma and lymphoblastic lymphoma groups of the classification of Gall and Mallory, and with equal rarity in their Hodgkin's lymphoma and stem cell lymphoma groups. Leukemia is not regarded, then, as a specific disease entity but rather as one of the objective findings in this general group.

The final classification and diagnosis of this entire group is dependent upon histologic examination.

LYMPHOSARCOMA-LYMPHATIC LEUKEMIA GROUP

Under this broad heading may be included the stem cell, the clasmotocytic, the lymphocytic, the lymphoblastic, and the follicular lymphomas of the morphologic classification. Although these different types show slight individual differences in averages, such as in age incidence, they all exhibit the same general characteristics of the malignant lymphoma.

HODGKIN'S DISEASE

On the basis of the morphologic classification the most commonly encountered lymphoid malignancy is Hodgkin's Disease. As in all of the other malignant lymphoblastomata there is a definite preponderance of males in sex incidence which approximated 3:1.

Commonly a generalized disease involving the superficial and deep lymphoid tissues as a disseminated disease, Hodgkin's is rarely seen as an isolated primary growth originating apparently in the lymphoid tissues of a viscus such as the stomach or small bowel.

More so than the other lymphomas, Hodgkin's Disease is the picture of an infection with febrile manifestation (50%-59%)[1] which occasionally may be accompanied by ague-like chills. The intermittent fever of Pel-Ebstein type occurs with some frequency but is not by any means invariable. Eosinophilia although observed occasionally is not seen frequently in the hematologic picture. Cutaneous lesions are of infrequent occurrence although rarely seen as an initial manifestation. Visceral lesions as mentioned above may be primary. Rare cases of primary pulmonic involvement are seen.

DIFFERENTIAL DIAGNOSIS

Diagnosis of disease of lymphoid tissue must consider inflammatory processes, as well as malignancy. The grave portent of the diagnosis of lymphatic malignancy should demand that consideration of all other possibilities be exhausted before final classification is made.

The lymphatic tissues, as a series of filters in the lymphatic channels which transport particulate matter and substances in solution, respond readily to injury with inflammation and hyperplasia. The common result of such response is lymph node enlargement.

It is possible for any of the inflammatory lesions of lymphoid tissue to simulate malignancy both in clinical manifestation and microscopic appearance. Syphilis can be overlooked and misdiagnosed as malignancy. Other inflammatory lesions have been, and undoubtedly will be, similarly misinterpreted. The following outline is meant to illustrate in a general way the various inflammatory lymphadenopathies which may masquerade as malignancies and which, therefore, should be considered:

CAUSES OF INFLAMMATORY LYMPHADENOPATHY

A. Local acute lymphadenitis:
 1. Acute focal pyogenic infections.
 2. Primary specific infections.
 (a) Syphilis ("cryptic" chancre).
 (b) Other infectious granulomas.
 (c) Acute lesions of lymphogranuloma venereum.
 (d) Tularemia with occult primary lesion.
 (e) Bubonic plague (endemic in California).

B. Local chronic lymphadenitis:
 1. Chronic pyogenic infection.
 2. Chronic specific infections.

C. Acute generalized lymphadenitis:
 1. Infectious mononucleosis.
 2. Infectious lymphocytosis.
 3. Leukemoid reaction.
 4. Exanthematous infections.
 5. Infectious granulomata.

D. Chronic generalized lymphadenitis:
 1. Infectious granulomata.
 2. Tularemia.
 3. Undulant fever.
 4. Glanders.

As the outline indicates, the infectious granulomata may be the cause of lymphadenopathy, whether local, generalized, acute, or chronic. Some of the more obscure infections, such as glanders (b. mallei), tularemia, and undulant fever, are more likely to be overlooked because of their infrequent incidence.

Infectious mononucleosis, even today, is mistaken for leukemia or other of the malignant lymphomas. The heterophile antibody test is not infallible in diagnosis. There are certain cases which do not ever demonstrate the heterophile phenomenon. Early in the disease, the test is frequently negative. Diagnosis requires competent hematologic examination.

Infectious lymphocytosis undoubtedly has been mistaken for lymphatic leukemia as have pertussis, infectious parotitis, measles, and other of the acute infections of childhood which produce lymphatic reaction.

Leukemoid reaction is seen occasionally, particularly in childhood, when the lymphoid tissues are more active and labile. These tissues frequently respond to injury with dissemination of immature, toxic appearing leukocytes into the peripheral blood. This type of reaction is undoubtedly the entire source of the "recovered" cases of leukemia.

In patients showing lymphadenopathy, whether generalized or regional, where the process cannot be attributed to inflammation, the possibility of malignant lymphoblastoma should be borne in mind and the use of lymph node biopsy considered, particularly in those cases where apparent inflammatory

association is demonstrated but where the nodes fail to regress.

In any case with hemorrhagic manifestations, examination of the blood for evidence of malignant lymphoblastoma is warranted.

With involvement of the deeply situated mediastinal or abdominal lymph nodes, there may be evidence of the systemic effects of the malignancy without externally demonstrable tumor. Lesions of this character are difficult to demonstrate by any other means than x-ray.

Lymphadenopathy, particularly in the cervical region, may be the result of "silent" primary carcinomas of oral and nasopharyngeal origin. Less frequently carcinoma in other situations may give rise to distant or widespread involvement of lymphoid tissues.

BIOPSY

Diagnosis in the great majority of the cases of this group is dependent upon biopsy.

In the performance of biopsy one cannot overemphasize the importance of certain technical considerations which are briefly enumerated:

1. *Selection of area for biopsy:*

If there is a choice of biopsy site, lymph nodes from the inguinal area should be avoided. These nodes commonly show chronic inflammatory changes which frequently are of such severity that they are not suitable for diagnosis.

2. *Selection of individual lymph nodes:*

It is preferable to select the largest, or one of the largest, lymph nodes, rather than one which is only slightly enlarged. This statement is made on the basis of the fact that the larger lymph node will offer a more representative picture of the disease process. The small node may not even be involved.

3. *Avoidance of trauma to biopsy tissue:*

The biopsy is performed to obtain information by microscopic examination. Therefore, all consideration should be directed to the care of the biopsy specimen. In process of removal it should not be compressed by clamps or forceps. Compression of even slight degree causes traumatic artifacts of the extremely delicate lymphoid tissues so that they may be rendered unfit for examination. After removal, the specimen should not be palpated, incised, squeezed, or massaged, but given to the pathologist at once.

4. *Care of tissues when the biopsy is to be mailed:*

When the tissue is to be mailed to a pathologist and will be any time in transit, it is wise in order to insure fixation, to incise the tissue with a sharp knife in its midline long axis and from one of the pieces cut a slice of tissue measuring no more than 4 mm. in thickness. The tissues should then be placed immediately in a volume of fixative at least 10 times that of the tissue. Choice of fixatives varies as do pathologists. For general purposes, readily available 10 per cent formalin is satisfactory.

5. The pathologist should always be supplied with complete blood count and Wassermann reports and a blood smear should be sent with the biopsy specimen.

TREATMENT

Roentgen radiation is the only form of therapy which has proved to be effective in any significant degree as demonstrated over a period of years on large numbers of cases. The malignant lymphomata as a group react favorably and rapidly to relatively small amounts of radiation. It is occasionally observed that radiation of a single group of lymph nodes involved in a lymphomatous process will result in coincident reduction in size of involved lymph nodes in other body areas. The beneficial effects of Roentgen radiation are effective in palliation, prolongation of life, and in relief of obstruction, but are not curative. Tumors may reappear in treated areas immediately after completion of a course of therapy. Initial resistance to radiation therapy was encountered in 9 per cent of all of the cases studied by Gall and Mallory. Terminally, in some cases there is a marked resistance to irradiation.

Radio-active phosphorus has been used extensively in the treatment of malignant lymphomas. The results have been disappointing. In general, it has proven to be less effective than x-ray therapy.[3] The material has been used experimentally and is not available for general distribution.

Nitrogen mustard therapy (the use of hyoginated akyl amines), has been the subject of recent studies and the reports are somewhat favorable. These reports indicate that some cases resistant to radiation respond favorably to nitrogen mustards and that following such therapy responsiveness to radiation may be increased. Goodman, et al.,[2] make the following comment in discussion of their recently published results: "Although indications and contraindications for the use of nitrogen mustards remain to be established definitely, it is felt that these agents are deserving of further clinical trial in Hodgkin's Disease, lymphosarcoma, and leukemia. Like radiation, they do not cure."

SURGERY

The accepted concept of the malignant lymphomatous diseases is that they are the expression of a generalized disseminated process. There are, however, well authenticated, histologically verified cases where removal, or intensive irradiation, of a solitary localized visceral or skeletal lesion has been curative. Although the number of these cases is small, the definite character of the lesion and the possibility of favorable result should justify consideration of surgery where there is a demonstrated solitary lesion. Lesions of the tonsil and gastro-intestinal tract are the ones most likely to be cured by radical treatment.

PROGNOSIS

Prognosis in the average case in this disease group is most doleful. It is possible, on the basis of histologic classification of the lesion, to determine prog-

nosis in a general way insofar as survival period is concerned. The less differentiated lymphoblastic lymphomas, the stem cell lymphomas, and the clasmotocytic lymphomas show a very small percentage of cases with five-year survival. The more differentiated follicular lymphoma and lymphocytic lymphoma show approximately 50 per cent of the total number which survive for five years after diagnosis. Hodgkin's sarcoma which represents only a small percentage of the total is a much more malignant form of the disease than Hodgkin's lymphoma which shows five-years survivals in roughly one-third of the cases.

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"Cancer of the Lip" by Ian Macdonald, M.D., Chapter XI of the California Cancer Commission Studies will appear in this section of the January issue of CALIFORNIA MEDICINE. *Chapters IX and X on "Cancer of the Skin" will be published later.*

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EDITORIALS

Antiviral Processes

Viruses may be thought of as tiny living parasites, which have degenerated from higher forms of life such as bacteria and protozoa and which borrow energy, supplies and organization from the host cell.

Although a scarcity of antiviral processes exists in nature, several diverse considerations can be brought to bear in the study of them. The degeneration of higher forms of life which leads to viruses consists in the loss of one functional unit after another, with corresponding borrowing from the host cell, to which the virus soon becomes a complete parasite. Presumably these functional units are enzyme systems. Ultimately only a single unit may be postulated, which is a self-duplicating unit borrowing entirely the energy and organization of the cell.

Using this hypothesis, it is possible to visualize a corresponding line of chemotherapeutic agents, and, in part, facts may be mustered to support the idea. Thus bacteria and protozoa are susceptible to the action of many chemotherapeutic agents. Pleuropneumonia organisms and leishmanias, which are one step smaller, though not completely parasitic, are suseeptible to treatment with heavy metals. Descent to the lymphogranuloma and psittacosis group and to the rickettsias, where parasitism is obligate, still does not remove the microorganisms from attack by sulfonamides and penicillin, and by para-aminobenzoic acid, respectively. The final step to viruses proper is not a great one, and hence is to be anticipated in due course of time.

The first of the antiviral processes is the natural one of antibody production. Thus, active immunization against smallpox is of the highest order, while immunization to influenza, rabies, certain encephalitides, and, experimentally, even to measles and mumps, is more or less highly developed. Passive immunization is less rewarding, partly because its effect appears to be limited to a few virus infections in which man is the only convenient host, and hence the production of antibody in another species is impossible; and partly because the inaccessibility of the virus, hidden as it is within the host cells, prevents contact with antibody. Nevertheless, measles virus is subject to destruction by antibody, perhaps during its fleeting extracellular periods, and the disease is amenable to favorable influence by antibody preformed in another human—whether presented as blood from convalescents, or from pools of adults most of whom will have had the disease. In the second case it is most elegantly available as gamma globulin. The blood of patients convalescent from mumps and from infectious hepatitis may also contain antibodies which can influence the course of the corresponding diseases.

A second process, also using natural mechanisms, is based on the "interference phenomenon." In this situation, the presence of one virus within a cell may prevent or interfere with the entry of a second virus into the same cell. Thus, it is possible in some instances, to protect the organism from a harmful virus by a harmless one. In the best example, fox distemper may be limited by the injection of an attenuated variant, even when the latter is given some days after the time of the original infection.

In addition to natural antagonisms, man-made antiseptics may also be turned against viruses. The strong, heroic antiseptics like phenol are, of course, not applicable within the body, unless perhaps as caustics to destroy rabies virus in a wound. Mists of triethylene glycol, however, may be used to inactivate influenza virus in a room or ward.

Greater interest is aroused by the more subtle antiseptics. These are compounds of gentle action, which, probably by successful competition with necessary metabolites, in one way or another result in the death of a pathogenic organism without harming the host. With the precedent of the sulfonamides, the antibiotics, and quinacrine, such action against viruses is plausible, notwithstanding the protected intracellular position of the virus; and, in fact, minor effects have been demonstrated by several workers. Metabolites normally enter and leave cells freely, and in altered form this travel should still be possible.

Processes useful in seeking out the virus without harming the cell are still largely speculative, but the problem appears to be far from hopeless.

CLINICAL CONFERENCE

Treatment of Diarrhea in the Infant

A condensed report of the presentation made by Doctors Paul Freeman, John Castiglione, Alfred Fisher, and Paul Betzold at a staff conference at Children's Hospital of the East Bay, Oakland, California, May 6, 1947. Service of Dr. Clifford Sweet.

Dr. Paul Freeman: In the past few years there has been a vast increase in the knowledge of metabolic disturbances incident to dehydration and starvation. The increased availability of various fluids and specific nutrients concerned in the treatment of such disorders has resulted in more successful therapeutic measures, and has increased the responsibility of the physician in the administration of fluids. Our purpose here is to very briefly outline the available data on the proper use of parenteral fluids.

An estimate of the maintenance requirements of the resting child is an obvious prerequisite to the logical use of parenteral fluids in the sick child, and in Charts 1 and 2 we have represented the daily maintenance requirements of water, salt, calories, and protein, for resting infants and children. Note that the infant's water loss is about five times that of the adult's per unit of body weight.

Chart 1.—*Water Loss of the Resting Child*

Size	Total Loss	Usual Water Allowance
Infants	300 to 840 cc.	300 to 1000 cc. (60 cc/lb.)
Children.		
20-80 lbs.	840 to 1500 cc.	1000 to 1800 cc. (35-45 cc/lb.)
Adults.		
140 lbs.	1500 to 2100 cc.	1800 to 2500 cc. (20-25 cc/lb.)

It is just as important to see that these allowances are not grossly exceeded as it is to see that they are met, especially with respect to sodium chloride. A glance at the charts will show that if all the daily water requirements were given as normal saline solution, the salt requirements would be exceeded by some 500 per cent, which would result in harmful retention, generalized edema, and a decrease in urinary volume. This oliguria might be interpreted by the unwary physician as an indication for more fluids, as a sign of circulatory failure or renal insufficiency, or, if the patient were receiving a sulfonamide, as a sulfonamide oliguria. This latter interpretation might result in the discontinuance of a needed drug, or if the drug were continued, might indeed result in needless hematuria because of the oliguria. For these important reasons, the daily maintenance requirements of sodium chloride should not be greatly exceeded.

As in the past, the daily caloric requirements are supplied by dextrose parenterally, and, in such administration, the dextrose has reduced the endogenous protein catabolism to a minimum, thus acting as a body-protein-sparing agent. Today we can supply at least the basic protein requirements by the addition of amino acids to the parenteral fluids. Enzymatic hydrolysates of casein and pancreatic tissue which supply all ten of the essential amino acids have been available commercially for some time. If such a preparation is used, the concentration in the infusion should not exceed 5 per cent, since too rapid administration may result in vomiting hyperpyrexia, polyuria, and venous thrombosis. However, these amino acid preparations have not replaced blood and plasma as a means of supplying the daily protein requirements, and in the presence of anemia whole blood is specificially indicated. If hemoconcentration exists, plasma should be used to furnish the protein.

From Charts 1 and 2 the needs of the infant in terms of water, calories, salt and protein can be calculated. It is not possible to supply the maintenance needs as outlined here by clysis or by short intravenous infusions and clyses. A continuous intravenous drip is the method which should be used, and the rate of infusion should be limited by the ability of the child to oxidize the dextrose. This has been shown to be about 4 cc. of 10 per cent dextrose solution per pound per hour. Solutions given in excess of this rate produce a significant hyperglycemia and glycosuria, which of themselves have a dehydration effect, and may in addition exert a deleterious effect upon the kidneys and pancreas.[4] Whole blood or plasma transfusions at frequent intervals during the course of the parenteral therapy are required to supplement such fluids, and since whole blood supports blood and plasma volume better than plasma, it should be used unless there is a specific contraindication.

Up to this point we have been discussing the *maintenance needs* of the patients who are unable to take

Chart 2.—*Daily Basal Maintenance Requirements of Calories, Salt, Protein*

Size	Caloric (Gm. dextrose)	Amino Acids*	Salt (Normal Saline)†
Young infants	30 Cal/lb. or 7.5 Gm/lb.	0.75 Gm/lb.	1 Gm. or 125 cc. N.S.S.
Older infants	28 Cal/lb. or 6.5 Gm/lb.	0.5 Gm/lb.	1 Gm. or 125 cc. N.S.S.
Children	15 Cal/lb. or 3.5 Gm/lb.	0.3 Gm/lb.	80 cc., plus 2½ cc/lb. N.S.S.

* Blood and plasma are considered 5 per cent protein, or 5 Gm. per 100 cc.
† Blood and plasma are considered to be half normal saline solution, i.e., 100 cc. supplies 0.45 Gm. salt.
† Lactate-Ringer's solution contains 0.6 Gm. sodium chloride per 100 cc.

oral feedings. Such patients, when first seen, are usually suffering from starvation and dehydration; therefore, an estimate of the *amount* and *quality* of their fluid losses must be made and appropriate repair needs provided parenterally *in addition* to their maintenance requirements. The most reliable method for determining the amount and quality of loss of body fluids is by a careful history and clinical appraisal, evaluating particularly the length and severity of fluid loss by diarrhea or vomiting, the weight loss, tissue hydration and urine volume and concentration. Laboratory confirmation of the clinical impression is desirable, the hemoglobin, hematocrit, blood proteins, chlorides, and carbon dioxide combining power being especially useful.

Since for practical purposes all of the weight loss sustained by a dehydrated, starved patient is simple loss of water, this entire weight loss as estimated by the physician should be replaced with 24 hours of hospital admission by appropriate parenteral fluids. In addition, the maintenance needs for this period must also be met.

In Chart 3 is presented an assumed problem of a dehydrated acidotic infant of 5 kilograms and shows

CHART 3.—*Calculation of Needs of a Dehydrated 5 Kilogram (11 Pound) Infant*

*Fluid Loss: Estimated:**	
1. Weight before dehydration	5000 Gm.
2. Weight after dehydration	4400 Gm.
3. Total loss	600 Gm.
or 600 cc. water	
4. Extracellular fluid loss (½ of total)	300 cc.
5. Intracellular fluid loss (½ of total)	300 cc.
Provision For Replacement:	
1. Mixture of 1 part sixth molar sodium lactate and two parts normal saline for extracellulor fluid loss	300 cc.
2. Serum for protein depletion	100 cc.
3. Blood for Hgb. and protein depletion	100 cc.

* Where weight prior to dehydration is not known, replacement may be undertaken by the following estimation: for severe dehydration, 10 per cent of body weight should be replaced; for mild dehydration 5 per cent of body weight should be replaced.

his approximate parenteral needs over and above his maintenance requirements. Had this child been a dehydrated alkalotic patient (with, for example, pyloric stenosis) the extracellular fluid losses would have been replaced with normal saline solution because of the need for a higher concentration of chloride ions. The two solutions which are recommended as physiologically most suited for the repair needs of the extracellular fluids are (1) normal saline solution in cases of alkalosis, and (2) a combination of one part sixth molar sodium lactate with two parts normal saline solution for cases of acidosis. It should be remembered that normal saline solution is hypertonic with respect to the chloride ion of the blood.

Three points presented here we feel to be worthy of special emphasis:

1. The injudicious use of excessive amounts of normal saline solution in attempting to hydrate a patient may quickly lead to water retention.

2. Too rapid administration of dextrose, if long continued, may result in harmful glycosuria, hyperglycemia, and diuresis.

3. The most complete parenteral fluids available today are inadequate with respect to certain intracellular needs, and the necessity of initiating oral feedings as soon as possible must be clearly borne in mind. (The source of the material in this discussion and in the charts presented is largely the work of Butler and Talbot of Boston.[1])

CASE PRESENTATION

DR. CASTIGLIONE: With the introduction afforded by Dr. Freeman's discussion, I wish to present the case of a child in whom we feel that the maintenance of hydration by parenteral therapy was inadequately controlled.

A five months old infant was first admitted to the wards of Children's Hospital on February 11, 1947. The history was of an upper respiratory infection of three days' duration which had become complicated by deep cough, diarrhea, and fever of 106 degrees. Treatment was directed initially at the diagnosed bronchopneumonia and otitis media, and the diarrhea subsided almost immediately. Antibiotic therapy was successful, and the child gradually improved. On the 14th hospital day a complicating hemolytic staphylococcal pyelonephritis caused a rise in temperature and a few loose bowel movements, but this urinary infection was controlled by sulfadiazine. The patient was discharged as improved on the 20th hospital day. She had lost a total of 1 pound 9 ounces during hospitalization.

Three days following discharge she was returned to the hospital with the story of having had 22 large watery stools in the preceding 24 hours. She had vomited twice and had been extremely listless. The temperature on entry was 103.6 degrees. Weight was 12 pounds 12 ounces. Examination revealed a limp, unresponsive, extremely toxic baby, with a distended, tympanitic abdomen. No evidence of parenteral infection was found. An infusion and a clysis were given immediately and oral feedings were started in 12 hours because no diarrhea had been noted. All feedings were immediately vomited, however, and diarrhea again resumed.

Intravenous alimentation was begun and sulfadiazine and penicillin given. At first there was some improvement in the extreme toxicity, but a hectic febrile course started on the third hospital day, with spikes of fever to 105 or 106 degrees, and the baby expired on the ninth hospital day, the 35th day since onset of illness. Bowel movements were not exceedingly frequent, numbering three to four per day, but they were massive in volume.

Laboratory work revealed little of significance. An initial leukocytosis subsided by the seventh day. Hemoconcentration of 18 Gm. Hgb. on entry had fallen to 9 Gm. by the sixth day, and transfusions were given. Blood, urine and stool cultures were negative, and blood sugars were normal.

Postmortem examination was complete, but revealed only the following significant findings:

1. Acute catarrhal enteritis with agonal intussuseptions.
2. Generalized anasarca.

Because of the severe persistent toxemia and hyperpyrexia, the continued downhill course of this patient led to the fatal outcome. It was a shock to us, however, to find at postmortem the marked anasarca, with serous fluid in all body cavities. We therefore set out to review our treatment and to determine, if possible, the sources of our errors in the application of the principles of parenteral therapy.

We first recalculated the fluid and salt requirements, using the method outlined by Dodd and Rappaport [2] in their discussion of parenteral alimentation of infants with diarrhea. By their standards (which were modified from those figures determined by Talbot and Butler) the estimates of fluid need shown in Chart 4 were derived. The actual fluid that the baby received is indicated on Chart 5.

A review of these data makes more apparent certain errors of treatment:

1. Initial failure to evaluate the infant properly and to make up her replacement fluid needs; and, throughout the period of hospitalization, administration of an excess of saline and total fluid.

2. The choice of types and amounts of parenteral fluids was based upon clinical appraisal of the patient, without use of serial laboratory measurements to check the blood chloride, the state of hydration, and the acid-base balance of the infant. (Dodd has emphasized the unreliability of clinical judgment alone in estimating mineral losses in diarrheal states.[2])

3. The use of continuous intravenous infusion through a cut-down needle necessitated the administration of fluids for 24 hours a day. This led unwittingly on several occasions to giving too great a volume of fluid through inability to control the rate of flow accurately enough.

4. The caloric needs were not completely covered by glucose. Thus the amino acids administered were of necessity utilized for energy by the child rather than as building-stones for body repair processes.

The massive accumulation of water and salt that we found in all tissues at postmortem was, in part at least, the result of these errors. To avoid such mistakes in the future, we have agreed upon the following measures in our treatment of dehydration.

1. For all patients for whom we feel more than minimal parenteral administration of fluids is indicated, careful calculation of basic and replacement need, using such figures as we have presented here, will precede the inauguration of therapy.

2. More frequent use will be made of laboratory procedures in confirming or altering our clinical impressions as to state of hydration, with special reference to the amount of salt required.

3. We are developing a technique of utilizing continuous intravenous infusions into the scalp veins of infants. In this way we hope to meet the daily fluid requirements within a period of 18 hours, thus allowing the child intervals free of restraints when he can have full activity and during which time he can be weighed and bathed. This will obviate the round-the-clock need for fluid administration in order to keep a cut-down needle clear.

4. A system of charting the fluids administered, modified after Dodd, is being used and is proving an excellent means of careful daily control of our parenteral therapy.

While we do not believe that our errors in the care of this patient were primarily responsible for her death, we do feel that the analysis of our handling of her has been of great value to us, and we have presented her case here in an effort to share what we believe to be important considerations in the treatment of diarrhea in infants and children.

DR. HOROWITZ: Our residents here do not have all failures. They have had many successful cases. One for which the House Staff may take much credit will be presented by Dr. Betzold.

CASE PRESENTATION

DR. BETZOLD: An eight-day-old female entered the hospital January 3, 1947, having been born on Christmas of 1946 after a seven-month gestation, with a birth weight of 4 pounds, 10 ounces. The history prior to admission was only: "The child vomited on several occasions. The reason for transfer is lack of room at the referring hospital." The family history was non-contributory. Physical examination revealed a 3 pound, 12 ounce infant who was described as "looking as though it were hung together with strings." The baby was active, with a good cry, and responded vigorously to stimulation. No positive findings were noted save for irregular respirations, with shallow breaths followed by deep sighing respirations. The routine blood and urine tests were normal,

CHART 4.—*Basic Maintenance Requirements of a 13 Pound Infant*

	Basal Need	Replacement	Total
SALT	1 Gm. NaCl or 125 cc. normal saline sol. or 160 cc. lactate Ringer's sol. or 250 cc. blood, plasma.	5% of 13# or 350 cc. salt-containing fluid as N.S.S.	125 cc. normal saline solution daily. 475 cc. salt-containing fluid 1st day as N.S.S.
CALORIES	20 Cal/lb. or 5 Gm. glucose/lb. or 1300 cc. 5% glucose or 650 cc. 10% glucose.	None unless additional needed to combat acidosis.	650 cc. 10% glucose or 1300 cc. 5% glucose.
PROTEIN	1 Gm/lb. or 100 cc. 15% amino acid sol. or 300 cc. blood, plasma.	⅓ to ½ of salt-containing fluid for replacement should be blood or plasma.	300 cc. blood, plasma, or amino acid sol. daily; 250 cc. blood or plasma 1st 24 hr. as part of salt replacement.
FLUID	60 cc/lb. or 800 cc. daily.	See SALT, PROTEIN.	1375 cc. 1st day, 800 cc. daily thereafter.

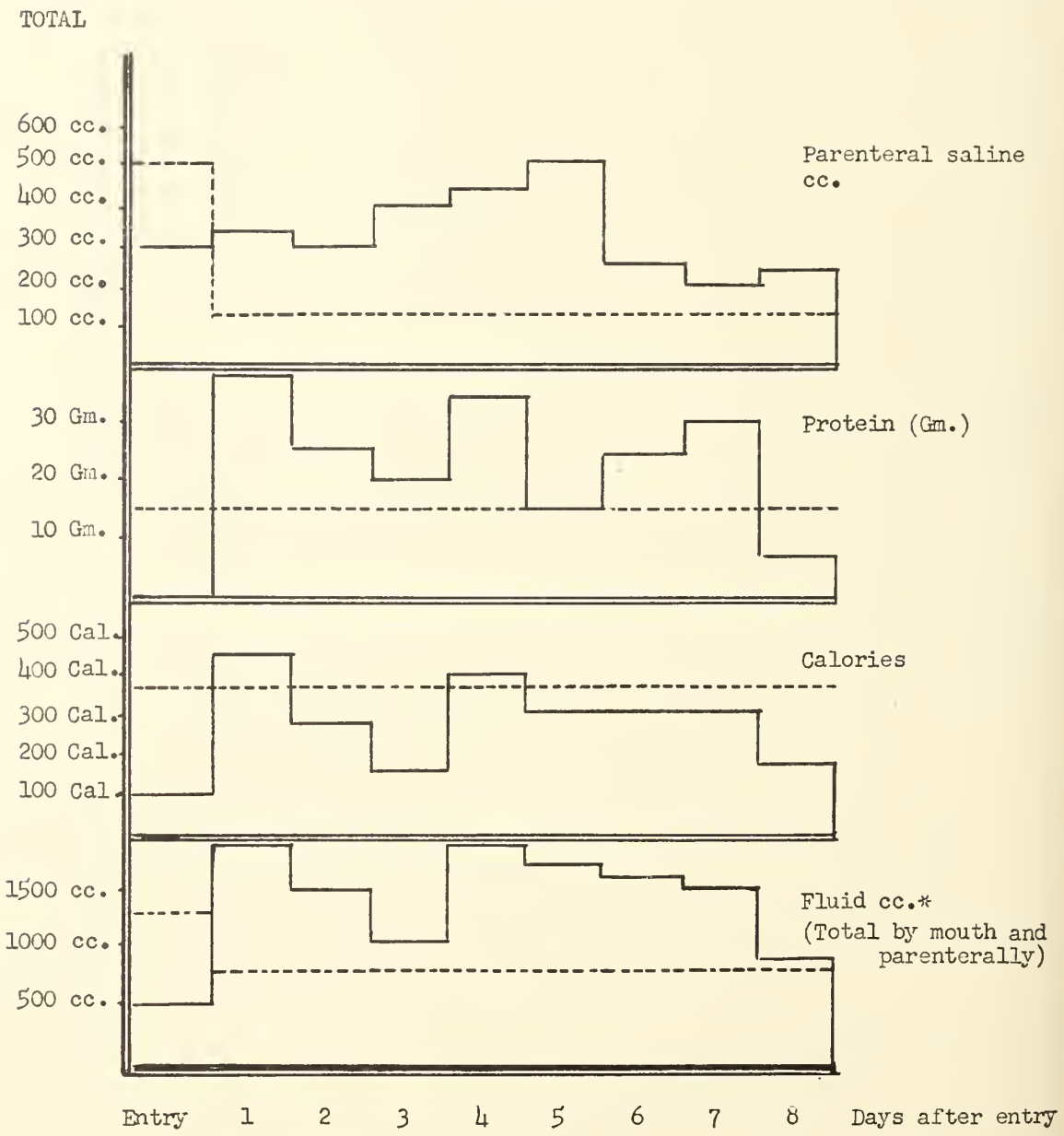
SUMMARY: First 24 hr. 250 cc. plasma.
350 cc. 10% glucose in normal saline sol.
650 cc. 10% glucose in water.

Daily thereafter:
125 cc. normal saline sol. mixed with
100 cc. 15% amino acid sol. mixed with
650 cc. 10% glucose in water.

To be given at rate of 60 cc. per hour over 15 hrs./day.

and the Kahn was negative. Routine premature care was established, and for four days the infant gained well to 4 pounds, 1½ ounces. It then developed a diarrhea, with weight loss, dehydration, weakness and debility despite transfusions, parenteral protein therapy, vitamins, elyses, and general supportive measures. A persistent dusky cyanosis developed which was not helped by oxygen, and a greyish pigmentation of the skin was reported. At four o'clock on the morning of February 10 a progress note was written. It describes the infant as follows: "Respirations irregular, color poor, slow jerking movements of head and extremities. Thighs, vulva, and lower abdomen distended with clysis fluid. Color improved by oxygen but still dusky. Has had one loose yellow stool during the night. Impression: diarrhea with toxic manifestation, uncontrolled." At this time calcium glueonate was administered intravenously to combat the convulsions, and the condition of the child improved. Later that day the blood sugar was recorded as 43 mgm. per cent. Because of the low blood sugar, desoxycorticosterone acetate therapy was begun with an initial dose of 2.0 mgm. and then 0.5 mgm. daily. From this time the progress notes indicate continuous improvement in the child's condition. The diarrhea subsided,

CHART 5.—*The Broken Lines Indicate the Calculated Requirements and the Dark Lines the Actual Amounts the Baby Received*



* Note that Dodd and Rappaport set no upper limit of total fluid administration, but restrict carefully the salt intake.

respirations became stronger, the hydration improved, and the child began to eat better. A gain in weight accrued gradually at first, more rapidly later, and despite a few episodes of mild diarrhea, there was continuous gain in weight and increase in strength. Blood sugar on February 25 was 83 mgm. per cent. On March 3, the cortical hormone dosage was reduced to 0.5 mgm. every other day and was discontinued on discharge, April 5, when the baby weighed 6 pounds, 4 ounces.

Three weeks later the child was seen. She weighed 8 pounds, 6 ounces and was a well-nourished child with no evidence of disease. Hydration was excellent, with a good layer of subcutaneous fat. The mother stated that the baby was active and well.

Dr. Fisher, who followed this case, and whose name appears frequently on the chart, will discuss it in relation to the use of the adrenal cortical hormone in diarrheal disease.

Dr. Fisher: The problem of the newborn who develops diarrhea without apparent cause shortly after dismissal from the hospital, who fails to become hydrated despite adequate parenteral therapy, who refuses to take more than one or one and a half ounces each feeding (and may even throw up a good part of that), and whose weight steadily decreases, constitutes a perennial problem to the pediatrician.

In the December, 1946, Journal of Pediatrics, Dr. J. C. Jaudon[3] reported a series of nine cases in which findings were similar; namely, general debility and weakness, appearance of impending shock, and a marked tendency to dehydration despite adequate parenteral fluid therapy. All were cases showing little hope of recovery, and in which any form of therapy seemed justifiable, regardless of its drastic character. Several of the infants showed blood sugar values between 10 and 20 mgm. per cent. Four patients had anorexia and loose stools from the early days of life without evidence of infection. Two others developed diarrhea in association with a staphylococcus septicemia, the latter responding well to penicillin therapy, but the loose stools and downward course persisted until adequate therapy was instituted.

The solution to these problems seems to be adrenal cortical hormone which produced such dramatic results in Jaudon's series and certainly aided our patient. In explaining the rationale of this therapy, Jaudon points to the anatomical structure of the adrenal gland during intrauterine life—the gland being composed primarily of fetal cortex or androgenic zone, with only a small rim of closely packed cells, the true cortex, forming a sheath about the others. Immediately following birth, the androgenic zone begins a rapid involution, while the rim of the true cortex commences to enlarge, probably due to an increased demand for its secretion. The question is posed, "Could there not be a phase of physiologically low activity during the period of transition?" If true, this concept would explain some of the deaths of premature and newborn infants in the first few weeks of life, which are preceded by periods of prolonged unexplained debility not responding to therapy. It would also shed some light on the course of certain infants who fail to rally despite the eradication of the disease which initiated the disability. McKittrick[6] and Ketteringham[5] have shown that almost all infants display a physiological hypoglycemia during the first few days of life which might be interpreted as a disturbance of carbohydrate metabolism secondary to low adrenal function. The rapidity with which glycogen disappears from the newborn liver also suggests adrenal hypofunction.

Each of Jaudon's infants received adrenal cortical hormone either as extract of beef or pig adrenal or as the synthetic desoxycorticosterone acetate, although all ended up on gradually decreasing doses of the latter. Dosage ranged from 0.5 to 5.0 mgm. of synthetic preparation, depending upon the physiological response. With recovery, the dosage was gradually reduced over a period of three to four weeks. All infants save one one were returned home completely weaned from the drug.

Jaudon makes a strong plea against the indiscriminate use of the hormone in large dosages, as it is far from innocuous. In combination with a large intake of sodium chloride, it has been shown experimentally to produce degenerative lesions in the arterioles of the brain, kidney and heart. In addition, it is theoretically possible to cause permanent atrophy of the adrenal cortex by prolonged or unwarranted administration of the hormone. This was exemplified by one case in this series who required a daily maintenance dose following administration for several months.

In summary, may I point out the signs of adrenal insufficiency in infancy, as corroborated by animal experimentation: a pronounced tendency to dehydration, asthenia, weight loss, hypoglycemia, anorexia, intermittent vomiting, loose stools, and failure to gain weight. The newborn infant who manifests any or all of these signs, without apparent reason, or the ailing child whose bacteria have been eliminated but who still fails to rally, must be strongly suspect of adrenal cortex insufficiency and the diagnosis subjected to laboratory confirmation. The blood sugar will probably be low, as well as the blood sodium and chloride; while the potassium level usually will be high. With this laboratory confirmation, daily intramuscular injections of adrenal cortical hormone (natural, or synthetic in the form of desoxycorticosterone acetate, 0.5 to 5.0 mgm.) are indicated.

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NOTICES AND REPORTS

C.P.S.-Veterans' Administration Contract Begins To Operate More Smoothly

Operation of the Veterans' Administration Home Town Care Plan, using the facilities of California Physicians' Service, now appears to have reached a smoother working basis following a period of initial administrative difficulties such as those which attend the establishment of any new system of such large proportions.

The program bogged down from time to time in the morass of governmental controls which, though apparently necessary, were irritating to the attending physician and to the veteran patient himself. These irritations at service level have been a matter of concern to the administrative officers of both the Veterans' Administration and California Physicians' Service. This concern has led to the development of swifter accounting procedures. For example, at times in the past the whole C.P.S.-Veterans' Department has operated under a 30 to 90 day backlog. At present all sections are operating on a nearly current basis. Work received in any one section of the C.P.S.-V.A. department is disposed of within 24 hours. Further, the issuance of Form No. 52, or Authority for Treatment on a new case, formerly took from ten days to two weeks. Today these forms are being processed in five days.

Although even the slightest time lag between the first call of a patient and the actual beginning of diagnosis or treatment is unusual in medical practice, with understanding on the part of both physician and veteran of the necessity for accountability, it need be no serious obstacle to successful treatment. Despite the constant and intensive effort to speed up the program, it is obvious that, if books are to be kept on the public funds involved, the time lag can approach, but never reach, the zero point.

The most frequent complaints of physicians participating in the program are in regard to delayed payments. Some of these complaints have been justified, particularly during the early stages of the program's operation. Today there appears to be little cause for complaint. C.P.S. is billing the Veterans' Administration for services rendered by member physicians within the month of service, provided the physicians' bills are complete.

A large number of physicians' bills, however, indicate errors of omission which make it impossible to process the bills for payment. A surprising number come through lacking the signature of the attending physician. The stand may be taken that the billing forms are too complex, but when a physician submits a bill lacking the date of first treatment, there is reason to suspect that carelessness is the fault, and not the complexity of the billing form. In any case, the Veterans' Administration insists that the forms be completed. Failure to do so results in delayed payments while clarifying correspondence is exchanged. A great deal of the irritation over delayed payments would be eliminated if greater care were given the preparation of the billing form.

In review, all of the procedural difficulties encountered in the program appear to be relatively minor when compared with the solid achievement it represents. Few physicians who have been interviewed recognize the tremendous significance the program will have in future relationships between the medical profession and the government. For what was undertaken as a hopeful experiment is now a demonstrable fact, a free and independent medical profession has demonstrated its ability to work with a governmental agency in providing services for a mass of the citizenry. And it has provided those services smoothly, almost casually, at a cost comparable to the best figures attained by the Veterans' Administration through its own medical facilities. Cost figures alone, however, do not tell the whole story. The savings to the Nation and to the veteran himself far exceed in significance the actual costs of services rendered under the program.

If the physicians of California had not been prepared to render services to the veteran in his own home town, the Veterans' Administration would have been obliged to expand its facilities enormously to

accommodate the demands put upon them. And this at a time of inflation. The costs of such an expansion program have been saved for the taxpayers of the Nation, and not by a curtailment of service, but by the use of a better method of providing such service. There is no reason why that method should not be the pattern for a broader relationship between the profession and the government in their mutual endeavor to provide the best medical care for our people.

The people, if we may judge by the veteran, *like* the method. It is convenient. It does not require leaving a job for a trip to a Veterans' Administration Hospital; it saves time and wages. It makes it possible to go to the physician of choice. These things register. They are important to the patients and to the physician's future among them. The fusing of a personal relationship begun by the first visit of a veteran to a physician's office is a more solid political gain than the achievement of a hundred lobbyists in the Halls of Congress. Grass roots are vital and tenacious. They live from season to season. They go deep and hang on. The Veterans' Program has not only been successful, it has been profitable as well to private practitioners. Since its inception it has given C.P.S. physician members directly more than $3,500,000 of income they would not otherwise have had. The vast majority of the veterans who have been treated privately would have gone to the various Veterans' Administration Hospitals. Moreover, it is probable that veterans who for any reason did seek private treatment would have had relatively meagre resources to support adequate treatment. Indirectly private practitioners have benefited even more. They have added to their practice not only the veteran but his family. They have established themselves more solidly in their communities. They have built future income. Politically, they have added supporters to their cause.

These opportunities for economic and political progress should carry a good deal of weight in physicians' evaluation of the Veterans' Administration Home Town Care Program.

In obtaining the Veterans' contract and in discharging its commitments, C.P.S. has reached full stature. Those with vision will recognize it for what it is, a democratic service agency with national significance and influence.

Notice to C.P.S. Physician Members

California Physicians' Service has asked Physician Members to make certain that bills for services rendered to Beneficiary Members are sent promptly to C.P.S. for payment. Doctors are asked not to wait until the end of a course of treatment, but to submit bills monthly. Because unreported bills constitute concealed liabilities which affect the financial position of the organization, C.P.S. again is reminding physicians that bills which are received later than 90 days after the end of the month in which services were rendered cannot be accepted for payment.

Traveling Seminars on New Medical Developments

Proposing to extend the latest developments in medical knowledge to practitioners outside of the larger metropolitan centers, the Committee on Postgraduate Activities of the California Medical Association is laying plans for a series of seminars to be held in towns throughout the state. The first meetings are scheduled for early in 1948.

In selection of topics for discussion, emphasis will be put upon practical subjects of every-day medical import. Use of clinical discussions rather than didactic lectures will be stressed. A day's program, as tentatively outlined, would be: Morning clinics, perhaps in the local hospital, an afternoon discussion on a specified topic, and an evening question and answer period on that or allied subjects.

Topics for each seminar will be announced in advance by the Committee, which will also arrange for authoritative speakers to discuss them.

Details concerning the seminars will be in the hands of Doctor Carroll B. Andrews, of Sonoma, who has been named Director of Postgraduate Activities. Doctor Andrews, who has taken the post on a part-time basis, will work with county medical societies in preparing for the meetings. Among his duties will be the arrangement of advance publicity to inform physicians in each area of the topics to be discussed. He will arrive a day or two before the meeting date to help local practitioners in lining up problem cases and in preparing questions to be submitted for discussion. He will also seek to elicit topics desired for future meetings.

Present plans are to make the seminars a continuing function of the Committee on Postgraduate Activities, with meetings to be held on new subjects in each community from time to time.

Attention, County Society Secretaries:

Secretaries of County Medical Societies are requested to report to California Medical Association the names and addresses of County Society officers as soon as possible after elections for the next year are held. To facilitate correspondence, it is important that the roster of officers printed in CALIFORNIA MEDICINE be kept up to date.

In Memoriam

Crawshaw, John Allen. Died in Hanford, October 18, 1947, age 68, after a short illness. Graduate of the University of Illinois College of Medicine, Chicago, 1905. Licensed in California in 1907. Doctor Crawshaw was a member of the Kings County Medical Society, the California Medical Association, and the American Medical Association.

✣

Donham, Robert Cecil. Died in Los Angeles, October 12, 1947, age 43, of bronchial pneumonia. Graduate of the University of Southern California School of Medicine, Los Angeles, 1933. Licensed in California in 1933. Doctor Donham was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

✣

Melvin, John Tracy. Died in Porterville, June 21, 1947, age 85. Graduate of Gross Medical College, Denver, Colorado, 1891. Licensed in California in 1908. Doctor Melvin was a Retired Member of the Tulare County Medical Society, the California Medical Association, and an Affiliate Fellow of the American Medical Association.

✣

Miller, Hiram Edgar. Died in San Francisco, October 17, 1947, age 57, following an operation for a tumor of the brain. Graduate of the University of California Medical School, Berkeley-San Francisco, 1917. Licensed in California in 1917. Doctor Miller was a member of the San Francisco County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

✣

Mulder, Ernest Ivan. Died in Compton, October 6, 1947, age 54, after a long illness. Graduate of the College of Medical Evangelists, Loma Linda-Los Angeles, 1920. Licensed in California in 1920. Doctor Mulder was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

✣

Shumaker, Edgar Kimmel. Died in Los Angeles, October 3, 1947, age 68. Graduate of the University of Pittsburgh School of Medicine, Pennsylvania, 1902. Licensed in California in 1919. Doctor Shumaker was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

✣

Toland, Clarence Gaines. Died in Los Angeles, October 2, 1947, age 72, of a coronary. Graduate of the University Medical College of Kansas City, Missouri, 1901. Licensed in California in 1901. Doctor Toland, a past president of the California Medical Association (1934), was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

CORRECTION:

In the tentative minutes of the 346th meeting of the C.M.A. Council, published on pages 337 to 342 of the November issue of *California Medicine,* a typographical error occurred in Item 7, printed on page 338. The first sentence of this item should read as follows: Dr. Green discussed a recent reported offer by Dr. Sidney Garfield and associates to establish a physician in Petaluma if the C.I.O. in that area would agree to secure medical care contracts from 200 of its members and their families.

NEWS and NOTES

NATIONAL • STATE • COUNTY

ALAMEDA

An expanding program at the University of California, School of Public Health has lead to the appointment of additional staff this year. **Charles Henry Hine**, M.D., Ph.D., has been appointed Lecturer in Toxicology. Dr. Hine was Research Assistant in Toxicology with the Wisconsin Alumni Research Fund; later was in private work as a research consultant. He served in the Navy in this field also. Dr. Hine received his M.D. from the Medical School, University of Wisconsin.

William W. Stiles, M.D., M.P.H., has been appointed Associate Professor of Public Health. Dr. Stiles received his M.D. at the University of Rochester in New York.

Dr. W. McDowell Hammon, professor of epidemiology in the School of Public Health on the Berkeley campus of the University of California, has been named vice-president of the Society of American Bacteriologists. The society is a national organization of those devoted to research in bacteria and other micro-organisms. Dr. Hammon, who also served in the University's Hooper Foundation on the San Francisco campus, is internationally known for his research in the virus encephalitides.

Dr. Bernado A. Houssay, noted Argentine endocrinologist who recently was named one of the recipients of the 1947 Nobel Prize for Medicine, will deliver the traditional **Hitchcock Lectures** in January on the Berkeley campus of the University of California. Dr. Houssay, who is director of the Instituto de Biologia y Medicina Experimental in Buenos Aires, will deliver six lectures beginning January 8. He is an expert on carbohydrate metabolism.

LAKE

Dr. Charles Ambrose has resigned as Tulare County health officer and has been succeeded by Dr. Raymond L. Knight.

LOS ANGELES

The Third Annual **Obstetrical and Gynecological Postgraduate Assembly** of Southern California will be held in Los Angeles, February 9 to 14, 1948. The Faculty this year will include: Richard W. Te Linde, M.D., Professor of Gynecology, Johns Hopkins; Samuel A. Cosgrove, M.D., Director, Margaret Hague Maternity Hospital, Jersey City; Edward A. Strecker, M.D., Professor of Psychiatry, Pennsylvania; John Rock, M.D., Visiting Surgeon of the Free Hospital for Women, Boston; and Arthur T. Hertig, M.D., Assistant Professor Pathology and Obstetrics, Harvard. Invitations will be issued shortly to members of the various local obstetrical and gynecological societies of the western states, and to diplomates of the American Board of Obstetrics and Gynecology in this area. Provisions will be made for those attending previous assemblies.

Dr. E. Eric Larson, associate editor of the American Journal of Surgery and a director of the California Division of the American Cancer Society, has been elected president of the Alumni Association of the Mayo Foundation.

A course of lectures and demonstrations in **Clinical Endocrinology**, to be held in the Biltmore Hotel, Los Angeles, February 23-28, inclusive, has been announced by the Postgraduate Committee of the Association for the Study of Internal Secretions. The course is designed to be of interest and value to the general practitioner as well as to the specialist. Further information may be obtained from Dr. E. Kost Shelton, 921 Westwood Boulevard, Los Angeles 24.

SAN DIEGO

The Postgraduate Assembly sponsored by the Staff of the San Diego County General Hospital, which was held October 6 and 7, was pronounced an unqualified success by more than 300 doctors from Arizona, Ohio, and all of the Southern California Counties, who attended. Plans are already being laid for an even larger event to be held next year.

SAN FRANCISCO

Dr. William Anthony Reilly, former chairman of the Program Committee of the San Francisco County Medical Society and long active in Society affairs, has accepted the professorship and position as head of the newly formed, full-time Department of Pediatrics at the University of Arkansas School of Medicine in Little Rock.

A tumor "inventory," which will increase knowledge of the natural history of different types of cancer and indicate the efficiency of various forms of treatment, is now functioning at the University of California Medical School. The inventory was set up under the direction of **Dr. Isabella Perry**, assistant professor of pathology, in recognition of the need for uniform statistical data on cancer.

"A registry and follow-up of cases is as important to cancer treatment as an inventory to business," Dr. Perry said. "Current problems call for integrating the medical knowledge and interest in cancer with the techniques of statistical research, acceptance of uniform records and nomenclature, and the integration of efforts of various organizations registering cancers."

Dr. William F. Wagner, resigned last month as chief of the division of tuberculosis control of the San Francisco Health Department in order to take charge of the State of Virginia's tuberculosis control operations.

Dr. Merrill C. Mensor was elected president of the Western Orthopedic Association at the annual meeting of the Association held in Los Angeles early last month. More than 200 doctors from 11 western states attended the meeting.

Dr. Anthony J. J. Rourke, physician superintendent of Stanford University Hospitals, recently was elected a member of the board of trustees of the American Hospital Association at the association's 49th annual convention in St. Louis.

Dr. Rea E. Ashley, San Francisco, has been elected second vice-president of the American Academy of Ophthalmology and Otolaryngology. The election took place at the academy's annual meeting at Chicago in October. Doctor Ashley is a member of the Stanford Medical School faculty.

Dr. Howard A. Brown, associate clinical professor of neurological surgery at the University of California Medical School, has been elected president of the American Academy of Neurological Surgery.

TULARE

Dr. M. C. Beil of Upper Lake, California, has replaced Dr. Richard A. Macklin as the health officer of Lake County.

GENERAL

The Council on Industrial Health will hold its Eighth Annual Congress on Industrial Health in the Cleveland Auditorium, Cleveland, on January 5 and 6, 1948. These dates immediately precede the Interim Session of the American Medical Association, which will be held in the Auditorium on January 7 and 8.

The program of the Congress is being constructed with general pratitioners in mind and will include discussions of first aid and emergency services in industry, physical examinations, administrative practices, applied physiology, aviation medicine, radiation medicine and practical expositions of occupational disease management, traumatic surgery and rehabilitation.

The National Federation of Small Business, Inc., San Mateo, Calif., which has been leading an **intensive fight against socialized medicine**, is sponsoring a series of radio broadcasts on the subject. Some time ago the federation, which is composed of independent business men from every section of the country, conducted a poll among its members on whether or not they favor House Bill S. 1320—the revised version of the Wagner-Murray-Dingell bill. Results were: For—13 per cent; against—85 per cent; No vote—2 per cent.

"Cancer Teaching Days" have been planned for presentation of refresher courses to county medical societies and hospital staffs during the coming year by the Chronic Disease Service of the California Department of Public Health, the Cancer Commission of the California Medical Association and the California Division, American Cancer Society. The refresher courses will consist of one-day teaching visits to local non-metropolitan areas by local selected clinicians representing the various specialties which have a particular contribution to make toward cancer control. The program has been designed to extend the postgraduate cancer professional education program from the medical school centers out into the other parts of the State. Programs will be given at the request of the local medical society.

The American Urological Association offers an annual award of $1,000 (first prize of $500, second prize $300, and third prize $200) for essays on the result of some clinical or laboratory research in Urology. Competition shall be limited to urologists who have been in such specific practice for not more than five years and to residents in urology in recognized hospitals. The first prize essay will appear on the program of the forthcoming meeting of the American Urological Association, to be held at the Hotel Statler, Boston, Massachusetts, May 17-20, 1948.

For full particulars write the Secretary, Dr. Thomas D. Moore, 899 Madison Avenue, Memphis, Tennessee. Essays must be in his hands before March 1, 1948.

An invitation to readers of California Medicine to nominate speakers and suggest titles of papers on new developments in thoracic surgery and medical treatment of tuberculosis, to be presented at the Annual Meeting of the **California Tuberculosis and Health Association** and the California Trudeau Society in Long Beach, April 1, 2, 3, was extended by Dr. Thomas B. Wiper, Chairman of the Medical Section, Program Committee.

The next written examination (Part I) of **American Board of Obstetrics and Gynecology** for all candidates will be held in various cities of the United States and Canada on Friday, February 6, 1948, at 2 p.m. Candidates who successfully complete the Part I examination proceed automatically to the Part II examination held later in the year.

Officers who will serve for the 1947-48 term were announced recently by the **California Society of Internal Medicine**, an organization with over 400 members. President is Donald E. Griggs, Los Angeles County; vice-president, Harold Behneman, Riverside County; secretary-treasurer, DeWitt K. Burnham, San Francisco. Other members of the society's council are: H. Gordon MacLean, Alameda County; Harold C. Torbert, San Diego County; Donald Carson, San Francisco County; Frank B. Reardan, Sacramento County; Gurth Carpenter, Los Angeles County; C. Kelly Canelo, Santa Clara County.

Dr. Richard Bullis of Los Angeles has been elected president of the **Board of Medical Examiners**, succeeding Dr. Herbert C. Chapman of Stockton, San Joaquin County. Dr. Clayton Mote, an assistant clinical professor at the University of California Medical School, San Francisco, has been appointed to the board by Governor Earl Warren to fill the vacancy created by the resignation of Dr. Chapman. The board also elected Dr. Anthony Diepenbrock of San Francisco as vice-president and reelected Dr. Frederick Scatena of Sacramento as secretary-treasurer. Dr. Joseph Zeiler of Los Angeles is the retiring vice-president.

The California Attorney General's Office, in an opinion issued recently, held that county boards of supervisors have the right to choose the doctors who practice in county hospitals. Supervisors may exclude certain types of practitioners even though they may be licensed by the state, according to the opinion, which reverses a previous ruling.

INFORMATION

AMCP Goes to Work

FRANK E. SMITH, *Director of Associated Medical Care Plans*

Associated Medical Care Plans, formed in March, 1946, as a central organization to coordinate and correlate the workings of individual prepaid medical care plans the country over, has passed through three phases of preliminary development to emerge now in its functional form.

The first six months of AMCP's existence was given to crystallizing the basic idea that 60 non-profit prepaid medical care plans operating in 40 states can become infinitely more effective as cooperating units in a strong national organization than would be possible should they remain unrelated.

Another six months was spent in explaining that idea to individual medical care plans so that they might join AMCP. There are now 44 members in the organization. Four applications for membership are on hand and several more are expected soon.

A third six-month period was spent in outlining a workable program. To do this, AMCP developed nine standing committees. Personnel was drawn from among boards of trustees, executive directors, and employees of medical care plans. These committees drafted specific program recommendations in their respective fields of interest and submitted them for approval to the AMCP, which in turn referred them for acceptance to the AMCP Second Annual Conference which met in St. Louis on September 20-21, 1947.

With the theme "AMCP Goes to Work," the Second Annual Conference was the focal point toward which AMCP's director had been working for an entire year. Following is a brief summary of the St. Louis discussions.

AMCP—BLUE CROSS RELATIONS

Because the majority of AMCP's member plans are operated jointly with Blue Cross plans throughout the country, it is imperative that AMCP itself establish effective relations with the Blue Cross Commission.

A study of joint operating agreements, now in effect between cooperating medical and hospital plans, has been undertaken. From this study, preliminary tabulations have been made and distributed by AMCP to its members, and by the Blue Cross Commission to its affiliates.

Research studies are now being correlated by AMCP and the Blue Cross Commission to avoid duplication and error.

A plan—voluminous in detail—for the development of district organizations, to include both trustees and operating personnel, along parallel lines has been agreed to by AMCP and Blue Cross.

Joint Commission meetings have been held, joint meetings of Committees with parallel interests have been authorized, and an AMCP-Blue Cross Joint Committee has been established to smooth out differences between the two movements.

It is significant that, for the first time in the organized history of prepaid medical care plans and Blue Cross plans, a jointly sponsored national conference will be held in Los Angeles on March 29-30-31 and April 1, with California Physicians' Service and Hospital Service of Southern California as hosts.

CASE PROCEDURE

The Conference accepted the recommendations of a Committee on Case Procedure (covering such work as is handled for CPS by the Medical Department) for the compilation of a manual in the field of processing medical claims.

This manual, once developed, will serve as a reference guide for all plans in the administration of a Medical Department, including the functions of a Medical Director, the processing of claims for payment, office procedures, methods of record keeping, and coding. The manual is being written cooperatively by members of the committee, all of whom are Medical Directors themselves.

RESEARCH STUDIES

As soon as a research man can be added to AMCP's staff, work will begin in comparative studies of fee schedules and the all-important job of standardizing nomenclature, coding, and tabulation of claim experience. This is one of the prerequisites for actuarial studies. Basic agreements which will permit this work to be carried on, already have been reached.

PHYSICIAN COOPERATION

A prepaid medical care plan is based on the assumption that individual members of the sponsoring medical society will cooperate in the rendering of care to subscribing members of the plan. The assumption is not always completely safe.

AMCP's Committee on Physician Cooperation (working in the field assigned to CPS's Department of Professional Relations) has undertaken the problem of maintaining physician cooperation. It is making an exhaustive study to determine underlying causes for non-cooperation where it exists. A brochure describing the methods now utilized by various plans to secure physician cooperation is being prepared. Included will be a description of the pioneer work done by CPS's Department of Professional Relations.

RECIPROCITY

An agreement pertaining to the transfer of members from one plan to another was approved by the AMCP Second Annual Conference. It has already been signed by 40 plans. A portion of this agreement, originally achieved through the Blue Cross Commission, has been in operation for a short time.

It was generally agreed that a program for reciprocity of benefits on a national scale was quite impossible at present because of the wide variation in contract benefits, plus the practical difficulty of reconciling service and indemnity type plans in any proposed scheme of reciprocity. At the same time it was acknowledged that medical care plan beneficiaries have complained little of current practices by which a subscriber receiving medical treatment outside the area served by the plan in which he has membership, is reimbursed to the extent of the benefits he would have enjoyed had he been treated in his own area.

VETERAN'S PROGRAMS

Considerable progress has been made toward achieving uniformity of contract and administrative procedures among the plans which hold contracts with the Veterans Administration.

Through AMCP, these plans are now in a position to deal collectively with the V.A. By employing a staff member with experience in administering veteran's programs, AMCP is prepared to assist its members in the development of home town medical care programs for veterans or in direct negotiations with the V.A.

ENROLLMENT

A proposal for the establishment of a membership corporation to handle the enrollment of national accounts was approved in principal at the conference in St. Louis, to be worked out cooperatively with the Blue Cross Commission. A special committee is now working out details in meetings with a similar committee from the Blue Cross Commission. The results will be resubmitted to the AMCP Commission for final acceptance.

Studies in the field of rural and community enrollment methods were authorized, the compiled results to be made available as soon as possible.

PUBLIC RELATIONS

Highlighting the work of the Public Relations Committee was a presentation by J. Walter Thompson Company of a suggested program of national advertising to be undertaken by AMCP's member plans. No definite decisions were reached in St. Louis, although copies of the visual presentation are being made for widespread distribution within the next month. The presentation includes sample page layouts for insertion in such magazines as *Life*, *Saturday Evening Post*, and *Time*.

National advertising will be undertaken as soon as agreement among member plans can be secured and the problem of financing solved.

EXPANSION OF AMCP STAFF

The Second Annual Conference approved an increase in membership dues, which will provide AMCP with an approximate income of $65,000 for 1948. The increased income will permit the immediate expansion of staff facilities, which, in turn, will speed AMCP on its way toward accomplishing its objectives. During the first year of actual operation, AMCP had only its director and an office secretary. Present plans call for the addition of six more staff members by January 1, 1948.

CPS ASSISTANCE TO AMCP

CPS has contributed toward the development of AMCP in time, money, and personnel. Mr. W. M. Bowman, Executive Director of CPS, served two terms of office as the vice-president of AMCP, and Mr. Howard Hassard, CPS attorney, was recently elected a member of the AMCP Commission to succeed Mr. Bowman. During his tenure of office with AMCP, Mr. Bowman also served on the Executive Committee and as Chairman of the Enrollment Committee.

The following CPS personnel are now serving on AMCP committees: A. E. Larsen, M.D., chairman of the Committee on Veteran's Care; W. H. Gardenier, M.D., Committee on Case Procedure; Mr. Ralph Webb, Committee on Physician Cooperation; Mr. Richard Lyon, Committee on Research Studies; Mr. John W. McMahon, Planning Committee for the Los Angeles Conference in 1948.

BOOK REVIEWS

THE DIAGNOSIS AND TREATMENT OF DIARRHEAL DISEASES. By Wm. Z. Fradkin, A.B., M.D. Published by Grune & Stratton, Inc., New York, 1947.

The author of this newly published text states that the object of this volume is to present in practical fashion our present knowledge regarding the diarrheal diseases and he feels that scientific medical progress has become so specialized that a book covering all phases of diarrheal diseases is timely and necessary. He supports his thesis by noting a startlingly high morbidity in diarrheal diseases in the United States Army and in private practice and by quoting a high average hospital mortality rate of 16.7 per cent. He further attempts to substantiate the justification for this specialized publication by recalling the public health authorities' report that approximately 13,000,000 people in the United States are infected with E. histolytica, and that this parasitic infection is a well recognized cause of diarrhea. The text is divided into three sections: I. General considerations. II. Specific Diarrheal Diseases and III. Diarrheas of Infants and Children.

The first section includes the anatomical, physiological, bacteriological and pathological background of diarrhea; the diagnostic procedures and the general management. This includes a rather formidable and lengthy etiological classification of diarrheal diseases, which does not give any idea of the relative incidence of the 104 causes given. The chapters on sigmoidoscopy and the practical use of the sigmoidoscopic asperator are well presented and well illustrated, but the details of routine stool examination are almost completely neglected. The data included under blood dysentery agglutination tests is valuable. However, many physicians will disagree with the statement that these tests "should be done routinely if possible." Bacteriophage is well discussed, but receives more space than its clinical application warrants. In considering general treatment only two lines are devoted each to the use of sulfa-drugs and to the use of liver extract therapy; and the use of streptomycin is not mentioned.

Advice to avoid soups because they are "gas-producing," to sprinkle iron salt on the food, and that rectal installations are advisable in the management of diarrhea, is open to question.

In the second and largest section the chapters on protozoa and on intestinal worms are on the whole well handled and well illustrated, and will serve as a ready and practical reference to the identification and management of these parasitic infestations. In dealing with the bacterial etiology of diarrheal diseases the author has left much to be desired. Streptococcal, staphylococcal, gonococcal and luetic diarrheas hardly deserve the space devoted to them. The use of penicillin therapy is not mentioned in the management of "streptococcal diarrhea," and no evaluation of streptomycin therapy has been attempted for this group of cases. The author's wholehearted recommendation of prolonged vaccine therapy for chronic Shigella and Salmonella diarrheas amazes the reviewer of this text. Such a recommendation cannot be too strongly condemned. The chapter on idiopathic ulcerative colitis is disappointing. Three reasons for this opinion are the author's statement that surgery "is *never* indicated"; that pregnancy should be "interrupted in *all* cases"; and the fact that the possible role of allergy as a causative factor in this disease is never mentioned. In vitamin deficiency diarrheas only four lines are devoted to the treatment of sprue, and the folic acid therapy of this disorder is not even discussed. Pancreatic diarrhea is all too briefly described. The third section dealing with childhood diarrheas is short and not unlike standard texts dealing with pediatrics.

It is the reviewer's impression that this book on the sub-sub-specialty of diarrheal diseases is obviously not a complete scientific and encyclopedic exposé of the subject suitable for the specialist; and that it misses its mark in that it is poorly adapted for the average practitioner of medicine. Because of the complexities of certain diagnostic procedures recommended for routine studies; the lack of a nicety of balance of the material presented; the omission or lack of completeness of certain phases of diagnosis and therapy and frequent errors in sound clinical judgment, such as advising an *open drainage* type of operation for amebic liver abscess, this text in its present form is hardly a welcome addition to the already voluminous literature on specialty subjects.

* * *

FUNCTIONAL CARDIOVASCULAR DISEASE. By Meyer Friedman, M.D., Director, Harold Brunn Institute for Cardiovascular Research, Mt. Zion Hospital, San Francisco. Cloth. Price $3.00. Pp. 266. Williams & Wilkins Co., Mt. Royal and Guilford Aves., Baltimore 2. 1947.

This book is a resume of the research work that the author has performed on functional diseases with special reference to cardiovascular disturbances during the war. The author has done a first class job. Most of the experiments are simple, clean-cut, and give definitive solutions to the problems investigated. Some of the experiments are beautifully conceived and conducted and may be considered the best type of clinical investigation. Dr. Friedman first points out that fever can be of psychogenic origin and can be experimentally produced in susceptible individuals. This is an observation of fundamental physiological and clinical importance. He has demonstrated that certain common cardiac arrhythmias often associated with palpitation can be experimentally reproduced in certain individuals with this disorder. He has objectively demonstrated the muscular incoordination of these people. His test for the diagnosis of functional cardiovascular disease employing hyperventilation is simple, direct, and should have wide-spread clinical usefulness. The test has the advantage of being simple enough to be an office procedure.

Although the author is inclined to believe that the disturbance results from a "cortico-hypothalamic imbalance," he has never claimed that final proof for this has been obtained. Perhaps he might be criticized for suggesting this theory too frequently and avidly, but certainly anyone who has done as much work and has advanced our knowledge of a disorder as much as he has is entitled to suggest a working hypothesis.

It is perhaps unfortunate that he has called this book "Functional Cardiovascular Disease" since approximately one-half of it concerns other systems unrelated to the cardiovascular system—for example, functional disturbances of the respiratory, gastro-intestinal, muscular, and other systems. Certainly, the disturbances which Dr. Friedman has described occur frequently in civilian life with involvement of the cardiovascular system, but similar disturbances occur in other systems. This, however, is a minor criticism and does not detract from the quality of this study. Dr. Friedman is to be commended not only upon the excellence of his investigation, but also upon the fact that this large amount of work was done by one man with limited experimental facilities. Had the author been better equipped with ex-

cellent experimental laboratories it is likely that some of the phases of his investigation might have been more thoroughly performed.

The book is beautifully written, logical, and with adequate consideration of work performed by others. It can be read with benefit by internists, psychiatrists, orthopedists, gastroenterologists, and others. It is hoped that Dr. Friedman can continue with this excellent work.

* * *

PSYCHOPATHOLOGY, A Survey of Modern Approaches. By J. Ernest Nicole, O.B.E. Fourth Edition. The Williams and Wilkins Company, Baltimore. Price $4.75.

This small volume is described by the author as a handbook "designed to provide a general survey of the views of different schools [of psychopathology] of today," and "a guide to the many modern approaches rather than a textbook of any one." Any method of investigating the psychological nature and causation of insanity is deemed worthy of consideration if it offers hope of shedding light on such problems.

Although the book is not divided into parts, its content may be grouped roughly under four headings. The first portion is devoted to a summary of the systems of Prince, Freud, Adler, Jung, Rivers, Kempf and the Behaviorists. There are frequent brief digressions to indicate how the various schools at times meet on common ground, and at others diverge. These efforts do much to diminish the feelings of perplexity and confusion engendered by such condensed reviews.

The second portion deals with contributions from the field of anatomy, physiology, endocrinology, ethnology, sociology, psychobiology and psychology. With full recognition of the extreme difficulty of correlating these data, an endeavor is made to point out the need of incorporating pertinent contributions from these disciplines, and to indicate their probable significance to psychopathology.

The third portion deals with the application of psychopathology, not only to medicine, but to law, education, industry, sociology, art and religion. It emphasizes the value of psychopathology in furthering understanding in these fields. How the premature and too facile application of the limited present-day knowledge may lead to absurdities is indicated.

The fourth and last portion deals with three topics, which the author feels deserve more detailed consideration, namely, the concept of the ego in psychiatry, the herd-instinct, and type psychology. These three chapters represent an extension of the author's earlier attempt to collate the various schools of thought under discussion, and are sufficiently stimulating to make one wish he had devoted more space to this aspect of the book. Finally, a very valuable and rather extensive bibliography, which is limited to publications available in English, is included.

The value of this compendium does not lie in the revelation of startling novelties or discoveries, but rather in a reasonably successful attempt to bring order out of a great deal of confusion. It is recommended not only to physicians, but to members of other professions in which the recognition and management of personality problems is important.

* * *

PRACTICAL X-RAY TREATMENT. By Arthur W. Erskine, M.D. Third Edition, The Bruce Publishing Company. 1947.

This small manual on 155 pages, with 20 illustrations, contains much practical information on the elementary principles of x-ray treatment and especially elementary x-ray physics. For that reason it can be recommended to most medical students and all dermatologists. Owing to Doctor Erskine's eminence in the field of Radiology, it is already in the libraries of most radiologists. The text is clear but rather cursory, especially in connection with lesions requiring high voltage irradiation. The illustrations are somewhat antiquated, notably figure 15, and should be revised in subsequent editions. Some of the paragraphs are not visibly complete, for example the fourth paragraph on page 132. The reader wonders what happened to several hundred cases of cancer of the lip!

With these minor criticisms, the book can be recommended to most physicians.

* * *

DERMATOLOGIC CLUES TO INTERNAL DISEASE. By Howard T. Behrman, M.D., Assistant Clinical Professor of Dermatology, New York University College of Medicine; Adjunct Dermatologist, Mount Sinai Hospital and Beth Israel Hospital; Associate Dermatologist, Hillside Hospital; Diplomate of the American Board of Dermatology and Syphilology; Fellow of the American Academy of Dermatology and Syphilology. 1947. Grune & Stratton, Inc. Price $5.00.

The author published this small book because he felt that there was a need for the correlation of skin manifestations with visceral disease. Accordingly, for some 165 pages he has listed various conditions alphabetically by either a cutaneous or visceral title and has added a long or short note about each. There are many illustrations which on the whole are good. There is no table of contents and no index, unfortunate omissions which would make it unsuitable as a reference book even if the subject matter were more enlightening. Inclusion of them also would make unnecessary the fairly elaborate system of cross reference which sometimes becomes ridiculous. For example, on pages 158 and 159 ten conditions are named in large type; and for seven of these there is nothing for the reader except a reference to another page; which gives one a feeling of futility. There is no constancy about the method of putting a condition into its alphabetical place. The reviewer does not know why some diseases of the pituitary gland should be described under endocrine disorders and others given another place in the alphabet: For instance, acromegaly comes under "A" and Cushing's syndrome under "C." (Could it not be classified under "B"—for basophile adenoma?) Graves' disease is hidden under the sub-classification of hyperfunction of the thyroid gland, but Addison's disease occupies a niche of its own after acrosclerosis.

The author states that he has not included any diseases adequately described in standard texts. The reviewer believes that the subject matter which is included falls into this category.

* * *

HYPNOTISM TODAY. By Leslie M. Lecron, B.A., and Jean Bordeaux, B.A., M.A., Ph.D. Foreword by Milton H. Erickson, M.D. 1947. Grune & Stratton, New York. Price $4.00.

As a source of information for physicians regarding the phenomena of the hypnotic state this book is amply justified. Written by two lay hypnotists, it presents a relatively conservative treatment of the subject, rich in personal experience and containing many useful hints as to practical procedure. From this standpoint it is of value both to the practitioner of medicine who is not infrequently asked for an opinion regarding the procedure, and to the psychiatrist who may be anxious to gain personal experience in the field.

However, the book is apparently not directed solely to the medical profession. In the hands of the layman, it is probable that too optimistic an attitude toward the therapeutic value of the procedure would be engendered, while the portion of the book dealing with auto-hypnotic technics might well be of danger to certain individuals. Equally, this reviewer must deprecate any publication which prescribes treatment of the functional nervous disorders by others than qualified doctors of medicine.

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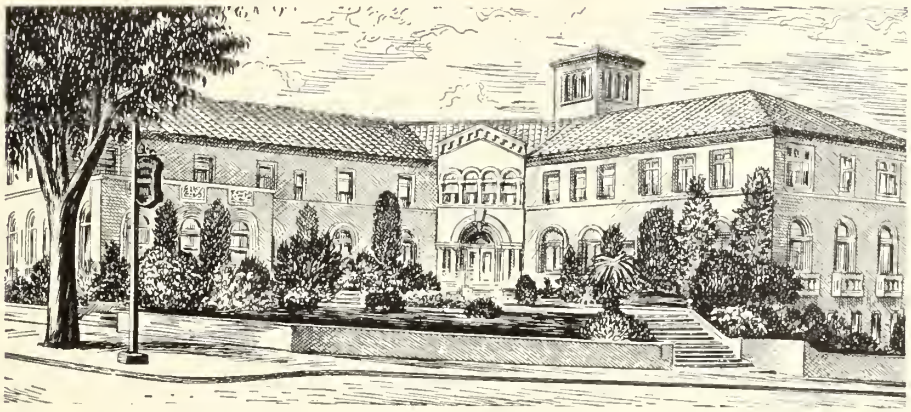
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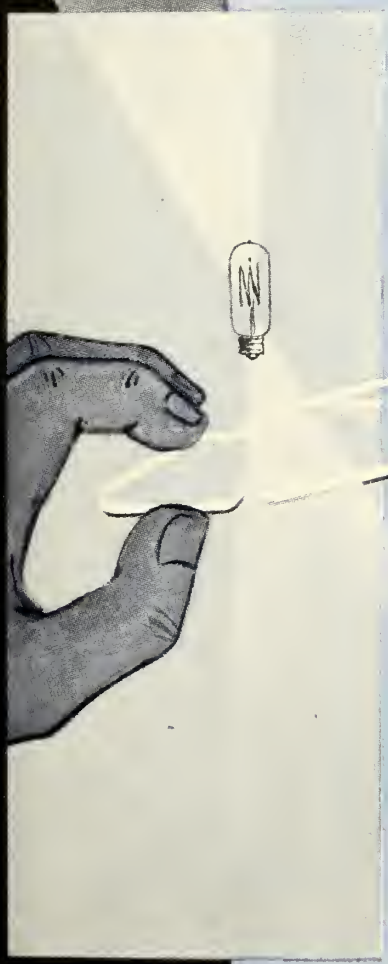
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disodium N-methyl-3,5-diiodo-chelidamate

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BOARD OF MEDICAL EXAMINERS OF THE STATE OF CALIFORNIA

By FREDERICK N. SCATENA, M.D.
Secretary-Treasurer

Board Proceedings

At a meeting of the Board of Medical Examiners held in San Francisco, May 10, 1947, the license of Henry Clay Wallace of Fresno, as a physician and surgeon, was revoked. The hearing on the accusation against Dr. Wallace was completed at the meeting held in Los Angeles, March 13, 1947. However, the decision was held in abeyance until the results of a decision of the District Court of Appeals had been received.

* * *

On June 21, 1947, the Board held the second oral and clinical examinations for graduates of foreign medical schools. The examination was conducted at the San Francisco Hospital, and 15 applicants appeared.

* * *

The staff of the Board has completed the compiling of statistical data regarding the number of renewals issued as of March 1, 1947. A total of 17,273 renewals were issued from January 1, 1947, to March 1, 1947, and included renewals for Physicians and Surgeons, Drugless Practitioners, Chiropodists, Naturopaths, and Midwives. The number of renewals issued to Physicians and Surgeons totaled 16,594; of this number, 3,509 gave addresses outside the State, leaving 13,085 giving California addresses. This is an increase of 2,524 giving California addresses over the number renewing as of March 1, 1946. The number of licentiates still in one or another of the branches of our armed forces is approximately 1,000.

* * *

News

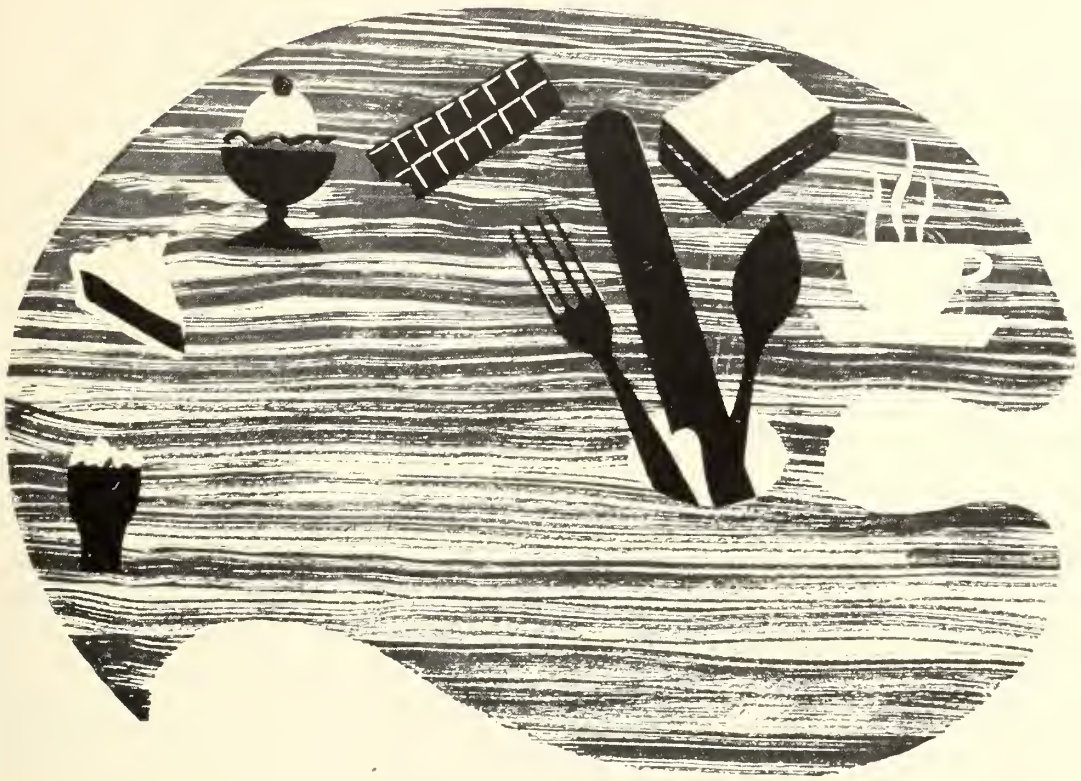
"Chiropractor Accused by State—Hanna C. Grubb, 58, practicing as a chiropractor at 1164 Market Street under the name of Hanna Hansen, yesterday was arrested by an agent of the State Board of Medical Examiners. She was charged with dispensing and practicing medicine without a license and released on $2,000 bail." (San Francisco, California, *Examiner*, May 25, 1947.)

* * *

"Fake Doctor Gets New 90-Day Term—Hugh Watkins, 38, today faced 90 more days in jail for practicing medicine without a license. . . . He already is serving six months for a previous conviction in Huntington Park. Watkins' new sentence was ordered to begin after he completes his present term. . . . 'An extra-ordinary type of charlatan,' was Municipal Judge Eugene P. Fay's description of Watkins when he sentenced him yesterday to three months in jail, suspended six-month sentence and placed him on probation for two years. . . . Watkins allegedly posed as a doctor and practiced in Los Angeles and Huntington Park for several years." (Hollywood, California, *Citizen News*, May 13, 1947.)

* * *

"Man Pleads Guilty of Illegal Medical Practice—George H. Bougon of 1940 Stockton Boulevard pleaded guilty in the municipal court yesterday to practicing medicine and pharmacy without the required license. Judge James M. McDonnell sentenced him to 30 days in jail, but suspended the sentence. . . . The charges were filed against Bougon as the result of investigations made last month by the state medical examiners and the state board of pharmacy." (Sacramento, California, *Bee*, May 15, 1947.)



the art of eating

Too many people "seem to feel that the art of eating consists of filling the stomach to capacity three times a day."[1] They ignore the fact that "calories alone do not make a balanced diet."[1] They need, therefore, and will continue to need, support of vitamin supplements. To better reconcile the science of nutrition with the "art of eating," Upjohn provides a full range of potent, balanced vitamin preparations. In a variety of dosage forms, Upjohn vitamins help paint a better nutritional picture for all age groups by obviating deficiencies or providing for their treatment in the practice of medicine and surgery.

1. J. South Carolina M. Assn. 52:186 (July) 1946.

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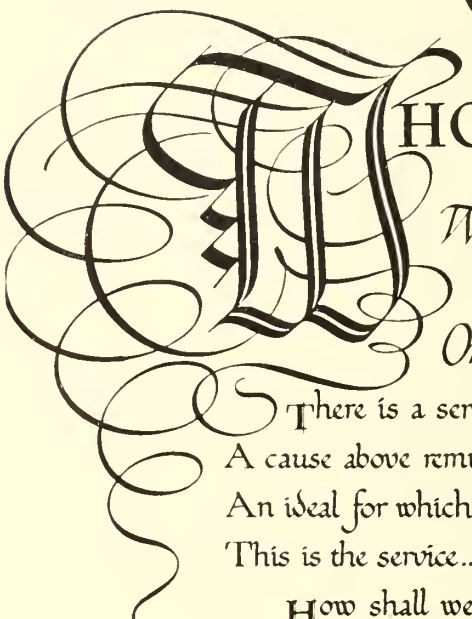
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WHO shall measure devotion, or put a pric
on sacrifice?
Who shall assess the long war agai
the power of Death?
Or set a sum upon the gift of Life?

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A cause above remuneration.
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How shall we reckon it, and by what formulae?
How much for the laughter of a little child rescued out of cris
What's the cost of discouragement?
Who can pay for a sleepless night?
Name the price of a cure!

MERICAN DOCTOR

endered . . ."

There is no algebra for it, no scribble of figures, no proper value.
this is a service as large as life, and as manifold.
s a soldier crying in agony on a thousand battlefields.
s the terrible word 'Why?" under the surgeon's probe.
s the end of pain.
s Hope.
s the lonely, unending quest for knowledge.
s the fight against ignorance, sloth, superstition.
s the dumb, unspeakable joy in the eyes of a parent.
s the rock of grief.
s cold rain and pounding storm and bone-weariness and the
-born babe gasping its first breath in the grey dawn.
It is all this, and the quiet glory of the job done,
dicated to service — in the name of Mercy
the common brotherhood of man.

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Variety meats—as the meat industry terms liver, kidney, heart, thymus (sweetbreads), and tongue—are at least as nutritionally desirable as muscle meat. In fact, in some respects certain organ meats are superior.

They provide the indispensable amino acids in the same advantageous complete assortment as muscle meat. Hence their protein is of the same high biologic value, capable of meeting every protein need of the organism. Quantitatively their protein content is approximately equal to that of muscle meat.

For hemoglobin synthesis, liver and kidney have been found superior not only to all other protein sources so far studied but also to muscle meat itself.

All organ meats are good sources of the B-complex vitamins. Some of them, such as liver and kidney, are especially rich in niacin. Liver is also an excellent source of vitamin A.

Apparently the vital role these organs play in the functioning of the animal body is reflected in the valuable contribution they can make to human nutrition. Their frequent inclusion in the human dietary—during disease as well as in health—is amply justified.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

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VASOMOTOR RHINITIS	349	268	2	79	76.7
ECZEMA	128	79	7	42	61.7
HAY FEVER	425	350	36	39	82.4
ASTHMA	435	275	7	153	63.2
MIGRAINE	73	48	1	24	65.7
ANGIONEUROTIC EDEMA	54	46	1	7	85.2
ATOPIC DERMATITIS	66	42	1	23	63.6
PRURITUS	24	18		6	75.0
ERYTHEMA MULTIFORME	28	22		6	78.6
DERMOGRAPHIA	20	15		5	75.0
FOOD ALLERGY	37	32		5	86.5
CONTACT DERMATITIS	63	49		14	77.7
PHYSICAL ALLERGY	11	7		4	63.6
REACTIONS—ANTIBIOTIC	84	81	1	2	96.4
REACTIONS—DRUGS	46	42		4	91.3
REACTIONS—BIOLOGICS	12	12			100.0
DYSMENORRHEA*	44	38		6	86.3
TOTALS	2665	2116	72	478	79.39

*those cases due to histamine-induced spasm of smooth muscle.

Benadryl
hydrochloride

PARKE, DAVIS & COMPANY, DETROIT 32, MICHIGAN

STUDY SHOWS STOMACH ULCERS FAIRLY COMMON IN ELDERLY PATIENTS

Dispelling the belief that stomach ulcers are rare in elderly patients, two Boston physicians report a study of 152 cases of ulcers, all in patients over 65.

Writing in the April 12 issue of *The Journal of the American Medical Association*, Everett D. Kiefer, M.D., and David McC. McKell, Jr., M.D., from the Department of Gastroenterology, the Lahey Clinic, state "we were surprised to note that as far as could be determined from the clinical histories 77 patients, approximately one half of the series, apparently had their first symptom of ulcer after they had passed their 60th birthday and 24 after their 70th birthday."

Citing an investigator who collected 1,079 cases of ulcers from medical literature, the authors say that he found that 10.5 per cent occurred in persons above the age of 60, which varies only slightly from the age distribution of the general white population in the United States, which is reported as 10.8 per cent over the age of 60.

The physicians suggest that several factors may be responsible for the clinician seeing peptic ulcers only rarely in elderly patients. (Peptic ulcers occur on the mucous membrane of the stomach or duodenum, the small intestine leading from the stomach.) Some ulcers heal completely and leave no demonstrable scar. Also, there is a tendency for the acid gastric juice, which aggravates ulcers, to decrease with advancing age which may be a factor in the quieting

(Continued on Page 17)



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Prescribe UNSCENTED AR-EX Cosmetics

Recent clinicol tests showed mony coses of cosmetic sensitivity, but not o single one to UNSCENTED AR-EX Cosmetics. For allergic potients, prescribe UNSCENTED AR-EX Cosmetics—free from all known irritonts ond allergens. SEND FOR FREE FORMULARY.



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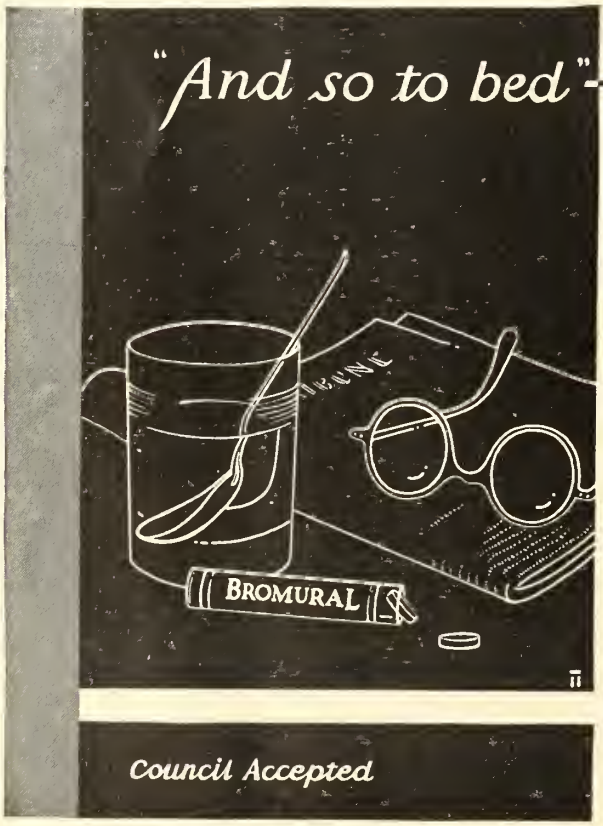
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*Feinberg, S. M.: J.A.M.A., 132: 702 (Nov. 23) 1946.

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* whenever antihistaminics are indicated

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now readily available

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2/1216

STUDY SHOWS STOMACH ULCERS FAIRLY COMMON IN ELDERLY PATIENTS

(Continued from Page 16)

down of the chronic ulcer as the patient grows older. "Furthermore," they state, "sound medical care, intelligent cooperation on the part of the patients and successful adaptation to the stress and strain of life may be expected to produce complete control of the ulcer disease in some instances, so that patients learn how to keep symptom free and find it unnecessary to consult their physicians for gastric complaints."

Drs. Kiefer and McKell point out that the medical treatment in this group is the same as that for any age group, with the exception of the diet, which should be low in fat and adequate in protein, carbohydrate and vitamin content. This is necessary to counteract malnutrition, which is more common in persons of advanced age with disease in the stomach region. In 87 patients the loss of weight averaged 18.5 pounds, according to the article, and varied between one and 55 pounds.

Profuse bleeding is more frequent in this group (31 per cent) and constitutes the most serious threat to life in connection with the ulcer. It should be treated medically except in cases of uncontrollable bleeding.

In conclusion the physicians state that "except for the complication of hemorrhage, the prognosis of peptic ulcer in the aged group is approximately the same as that for ulcer in any other group. There was a recurrence rate of ulcer activity of 32 per cent. The final follow-up showed that 107 patients obtained complete relief, 28 were improved but had recurrences, four were unimproved and eight had died of their ulcer."



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Chronic Alcoholism

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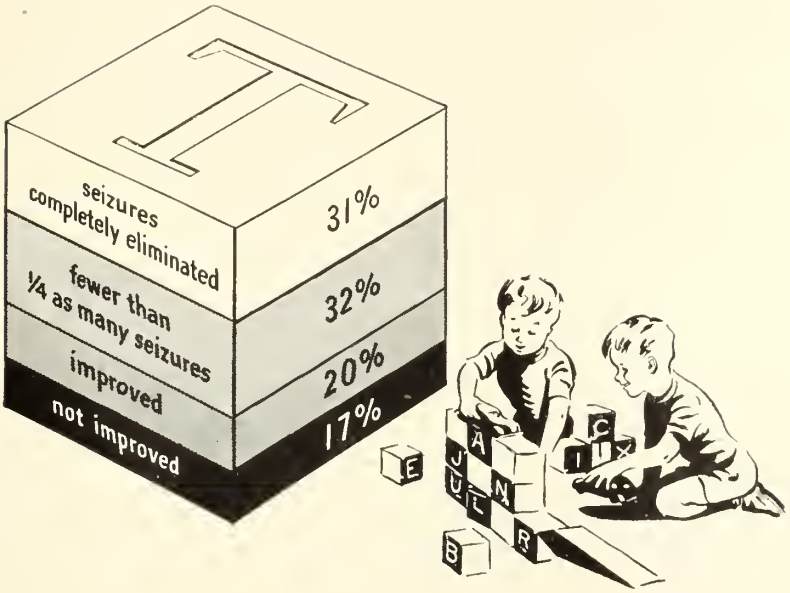
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83% of petit mal cases improve with Tridione

BIBLIOGRAPHY

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Here's new evidence of the effectiveness of Tridione in the treatment of petit mal. In a recent study, Tridione was given to 166 patients suffering from petit mal (pyknocpilepsy), myoclonic jerks or akinetic seizures.[13] This group as a whole had received but mediocre benefits from other medicaments. With Tridione, 31% of the 166 became free of seizures; 32% had fewer than one-fourth of the previous number of seizures; 20% improved to a lesser extent; 13% remained unchanged, and only 4% became worse. *Thus 83% showed improvement.* In some cases the seizures *did not return* after Tridione was discontinued, the longest seizure-free period thus far being 18 months. Studies also have shown that Tridione is of benefit to certain psychomotor patients when given in conjunction with other antiepileptic drugs.[12] Tridione is available through your pharmacy in 0.3-Gm. capsules and in pleasant-tasting aqueous solution containing 0.15 Gm. per fluidrachm. Capsules in bottles of 100 and 1000; solution in 1-pint and 1-gallon bottles. If you wish to know more about Tridione, just write to ABBOTT LABORATORIES, North Chicago, Illinois.

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DOCTOR ASKS FOR TOTAL WAR AGAINST LONG TERM ILLNESS

"Nothing short of total war waged by every stratum of society will avail against the devastating and far reaching consequences of prolonged illness, for it is among the meanest of the enemies of man," according to E. M. Bluestone, M.D., of New York.

Writing in the April 12 issue of *The Journal of the American Medical Association*, Dr. Bluestone, who is director of the Montefiore Hospital, points to the recent achievements of medical science with chemotherapy, antibiotics and the application of blood and its fractions as minimizing the menace of short term (acute) illness and maximizing the menace of long term (chronic) illness, which now stands out in bolder relief.

"Purely as a matter of self interest," states Dr. Bluestone, "since persons are living longer than ever before, and since the specter of long term illness is being confronted more than ever, hospitals must be reorganized to conform to the changing requirements of society and to arrange for the hospitalization of patients for longer periods of time."

The author proposes the following plan: "Every general hospital should have a Department for Continued Care attached to and drawing on its central diagnostic and therapeutic facilities. The prevailing method of isolating and segregating the long term patient at a distance from the general hospital has been successfully tried in only one philanthropic hospital [Montefiore Hospital] in all history, and this exceptional hospital is in reality a general hospital, with the only difference that its patients are sick for long periods of time. This hospital teaches, by its experience with the problem, that only by integration on a continuing basis can one hope to solve the problem to the satisfaction of medical scientist, social worker and hospital economist alike."



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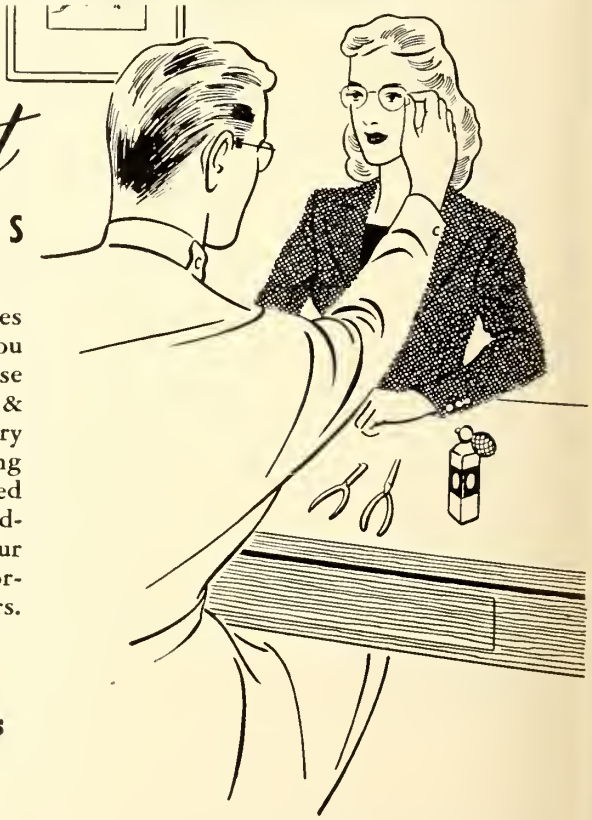
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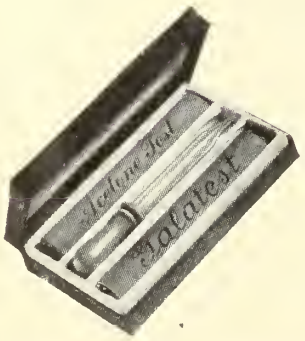
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PATIENT ADMITTED TO HOSPITAL EVERY TWO SECONDS LAST YEAR

During 1946 one patient was admitted to a hospital in the continental United States every two seconds and a live baby was born in a hospital approximately every 15 seconds, according to the 26th annual report of the Council on Medical Education and Hospitals of the American Medical Association.

F. H. Arestad, M.D., and M. G. Westmoreland, M.D., present the council report in the April 12 issue of *The Journal of the American Medical Association*. Their figures reveal that in comparison with 1945 the number of hospital beds has decreased from 1,738,944 to 1,468,714, the number of admissions from 16,257,402 to 15,153,452 and the number of patient days from 512,915,155 to 452,400,710. However, a total of 2,136,373 births were reported for 1946 as compared with 1,969,667 in 1945. This is the first year that hospital births in the United States have reached the two million mark.

Represented in the report are 6,280 hospitals registered by the American Medical Association, including 1,165 hospitals approved for internships and residencies and 2,640 accredited by the American College of Surgeons as meeting unconditionally its minimum requirements for general standardization. The number of hospitals totals 231 less than reported in 1945.

According to the present survey the governmental hospitals have 1,082,734, or 73.7 per cent of all beds, the nongovernmental group 385,980, or 26.3 per cent. In 1945 the corresponding percentages were 78 and 22.

There were 15,153,452 admissions exclusive of outpatients and newborn infants in 1946. For comparison it may be

(Continued on Page 28)

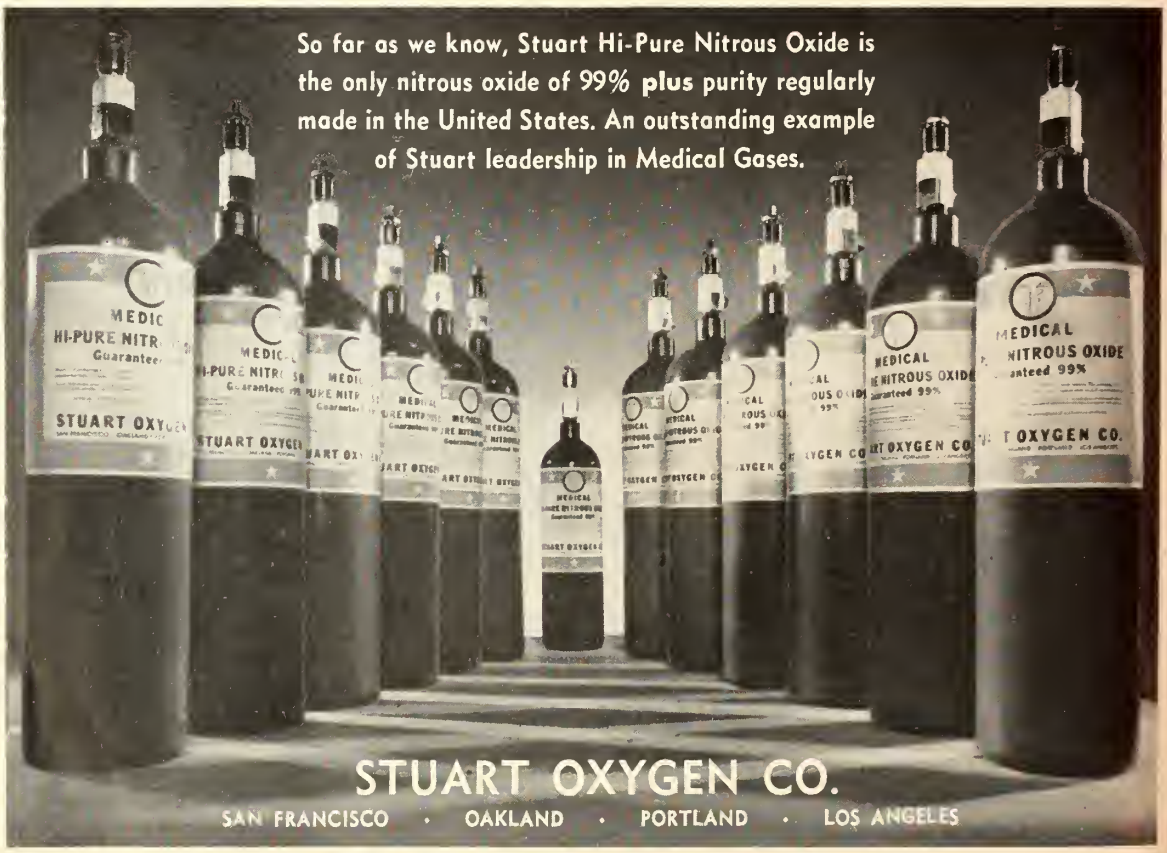
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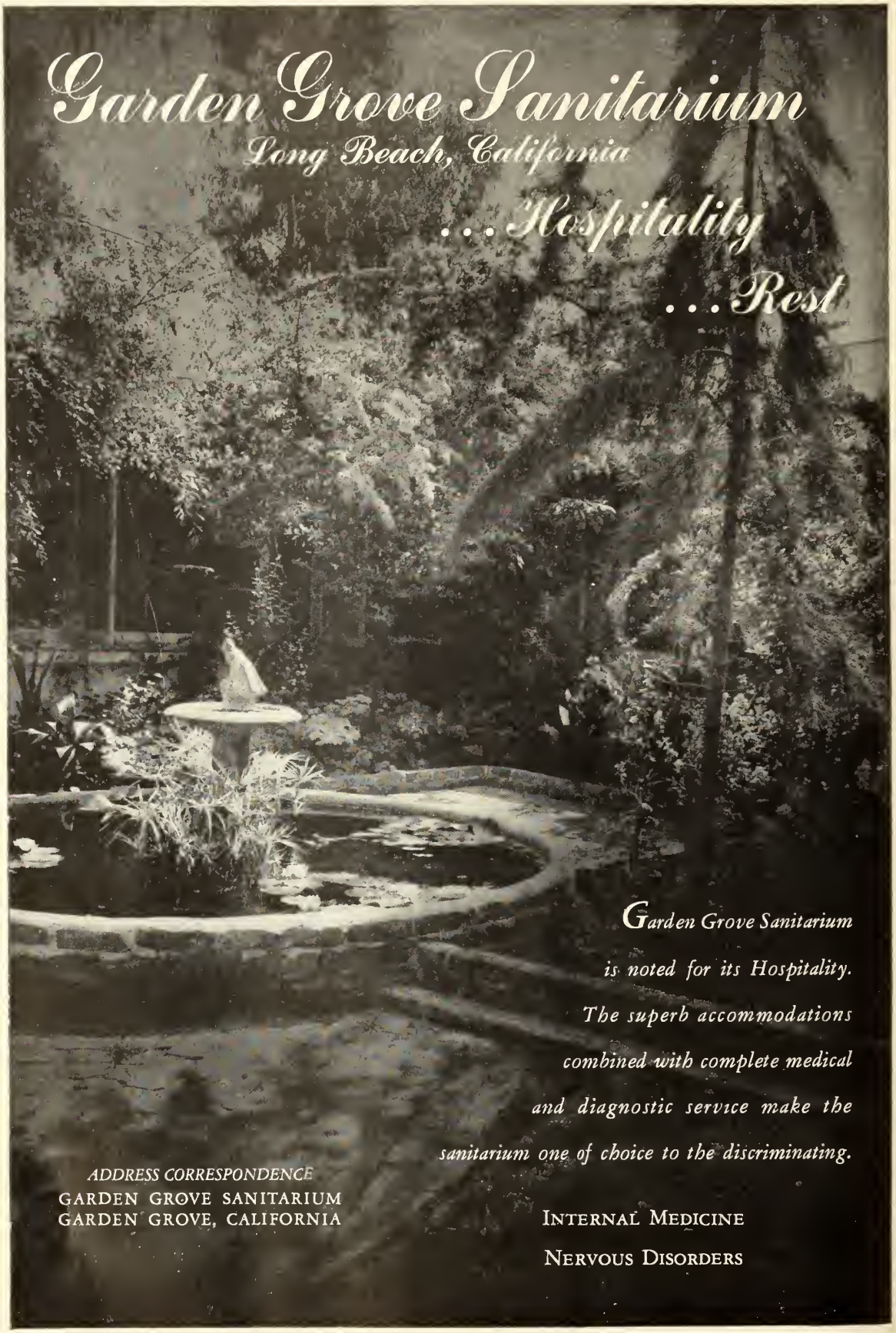
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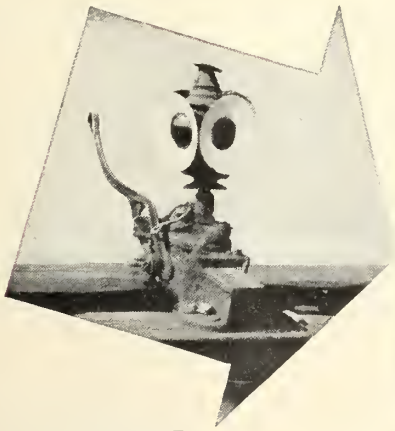
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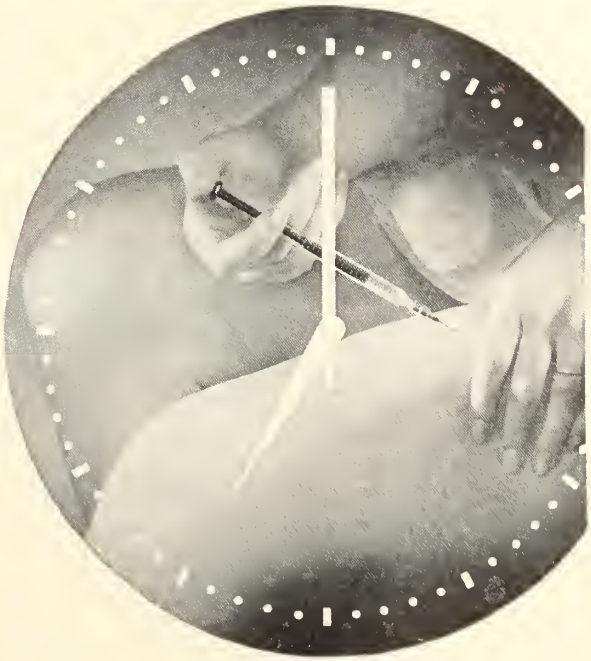
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PATIENT ADMITTED TO HOSPITAL EVERY TWO SECONDS LAST YEAR

(Continued from Page 24)

noted that in the period of 1933 to 1945 the hospital admissions increased from 7,037,982 to 16,257,402. The greatest annual gain, a total of 2,829,088, occurred in 1943, with subsequent increases of 662,150 in 1944 and 220,554 in 1945. This trend was sharply reversed in 1946, however, when the number of admissions decreased by 1,103,950.

The governmental hospitals with 73.7 per cent of the bed capacity reported 4,598,163 admissions or 33 per cent of all patients admitted in 1946. The nongovernmental hospitals with 26.3 per cent of the beds had 10,555,289 admissions, or 67 per cent. The corresponding ratios in 1945 were 39 and 61 per cent.

The general hospitals continue to offer a tremendous volume of hospital service, as evidenced by the report of 14,051,508 admissions in 1946, or 92.7 per cent of all patients admitted.

The mental hospitals, with a total of 674,930 beds, had 271,209 admissions, or 1.7 per cent of all patients admitted in 1946. In comparison with last year there was an increase of 22,333 admissions, with gains reported in all governmental and nongovernmental classifications.

An increase in tuberculosis hospitalizations is shown in the present survey, which reports a total of 99,741 admissions in the tuberculosis sanatoriums as compared with 86,186 in 1945.

The enormous volume of service rendered by hospitals in the United States is likewise reflected in the daily patient

(Continued on Page 30)

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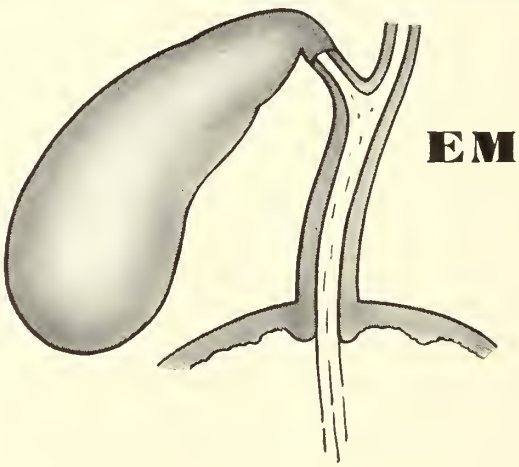
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*Int. Abst. of Surg. 83:1-12, July, 1946

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PATIENT ADMITTED TO HOSPITAL EVERY TWO SECONDS LAST YEAR

(Continued from Page 28)

load, which averaged 1,239,454 in 1946 exclusive of newborn infants. This represents a total of 452,400,710 treatment days. Compared with 1945, the daily census shows a net decrease of 165,793.

The percentage of beds occupied in 1946 showed increased occupancy rates in all governmental classifications except the hospitals operating under state control. The increase was especially noticeable in the federal division, where the percentage of occupancy has advanced from 55.1 in 1944 and 71.7 in 1945 to 80.6 in the present report. This change not only is indicative of the longer periods of hospitalization required in the care of the wounded but also is due to the reduction within the last year of a considerable number of hospital beds no longer required for military use.

Registered hospitals reported employing 146,602 graduate nurses exclusive of 28,245 private duty nurses during 1946. The corresponding figures for 1945 were 144,725 and 25,277.

In connection with the present survey, state accredited schools of nursing reported a student enrolment of 112,885 as compared with 130,909 in 1945. This reduction in student personnel is indicative of the difficult nursing problem now facing the hospital field and the country at large. *The Journal of the American Medical Association*, Jan. 11, 1947, stated editorially that admissions to schools of nursing in 1946 were lower than at any other time in the past ten years. Only 30,899 student nurses were admitted in 1946, as compared with 56,567 in 1945.

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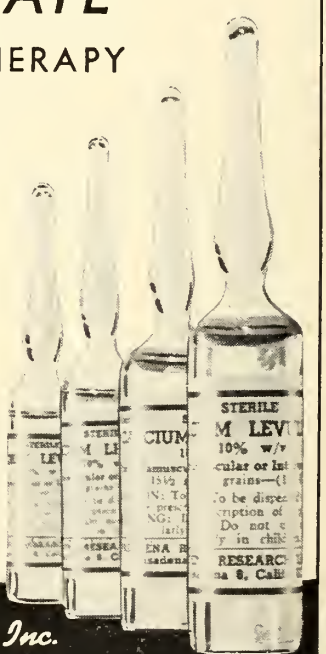
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R. B., a white American woman aged 46 was admitted to the Presbyterian Hospital on the 5th of August, 1945, with a diagnosis of Rocky Mountain Spotted Fever. Thirty-six hours after admission therapy was started with para-aminobenzoic acid, (PABA*), 4 gm. initially and then 2 gm. in 25 cc. of chilled 5% sodium bicarbonate every 2 hours, and the following day 25 gm. total was given. Following the first 24 hours of therapy with para-aminobenzoic acid (PABA*) clinical improvement was evident and continuous, with a rapid decline of fever and alleviation of headache, drowsiness and irritability. Her rash quickly subsided and was almost gone at the end of the first week.

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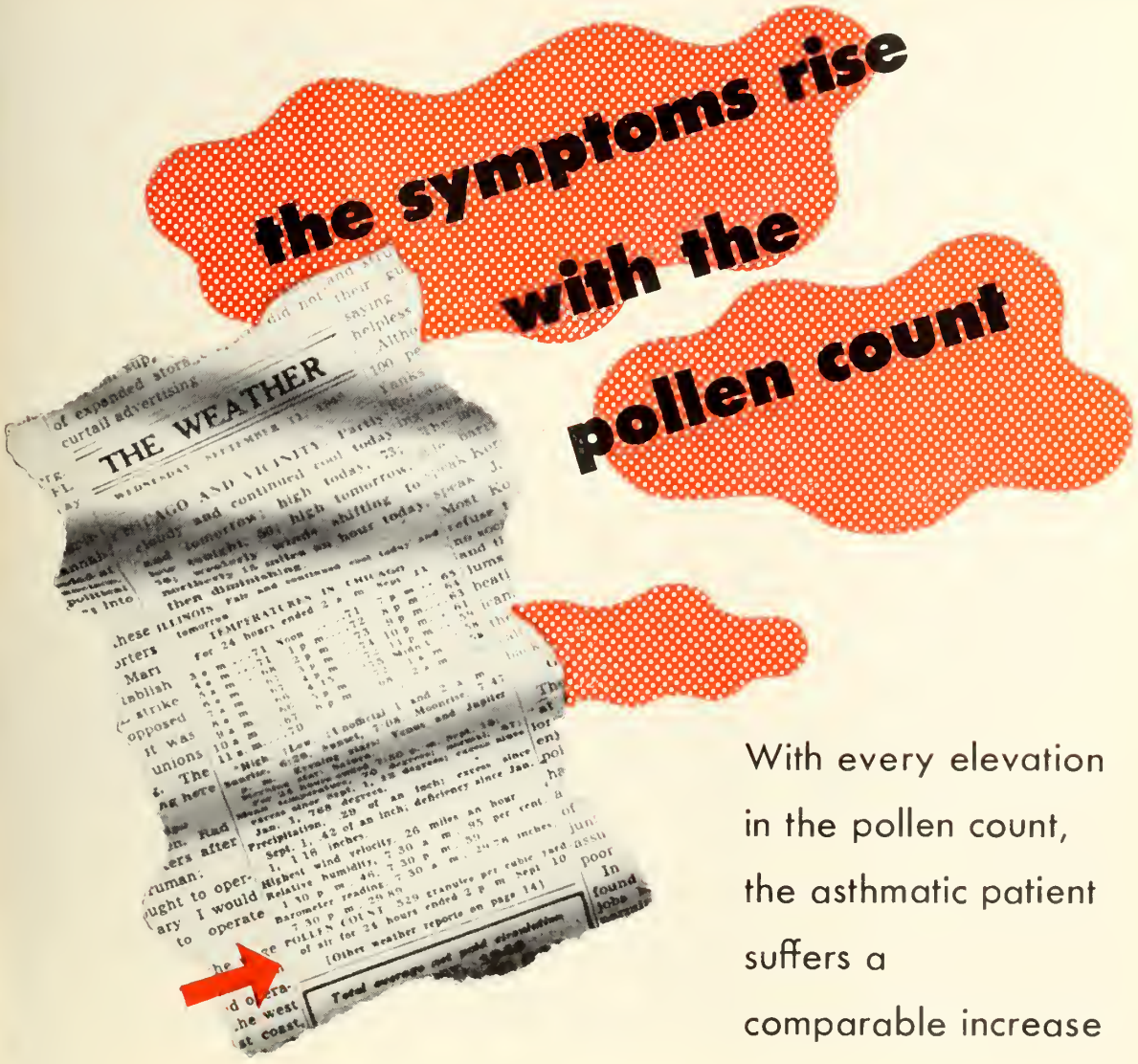


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SURGICAL GROUP ASKS SHORTER COURSES FOR BEDSIDE NURSES

Charging that the nursing profession has "lost sight of the need of the sick for adequate nursing care," the American Surgical Association advocates the immediate establishment of shortened courses for bedside nurses.

"The medical profession, the public, the hospitals and the sick patients demand adequate nursing care," the American Surgical Association says in a report appearing in the April 12 issue of *The Journal of the American Medical Association*. "It can be given. Years of higher education are not required to supply it, in spite of the unwise aims of national nursing bodies."

Commenting editorially on the surgical association's report, *The Journal* says:

"Apparently the surgeons are convinced that there should be many more nurses available for ordinary care of the sick —what is called 'bedside nursing.' They do not believe that the qualifications for studying nursing or the long term of education now in vogue are necessary for the training of girls in this type of service. They place the responsibility on leaders in the nursing profession.

"The situation is obviously more immediate than realized by most people. Recently compiled statistics indicate a deficit of 40,000 graduate nurses for the care of the sick. A poll taken by the American Hospital Association reveals 16 per cent of hospitals in the United States with beds closed for lack of nursing personnel; actually 33,000 beds in hospitals not available. Moreover, many beds are being filled

(Continued on Page 38)



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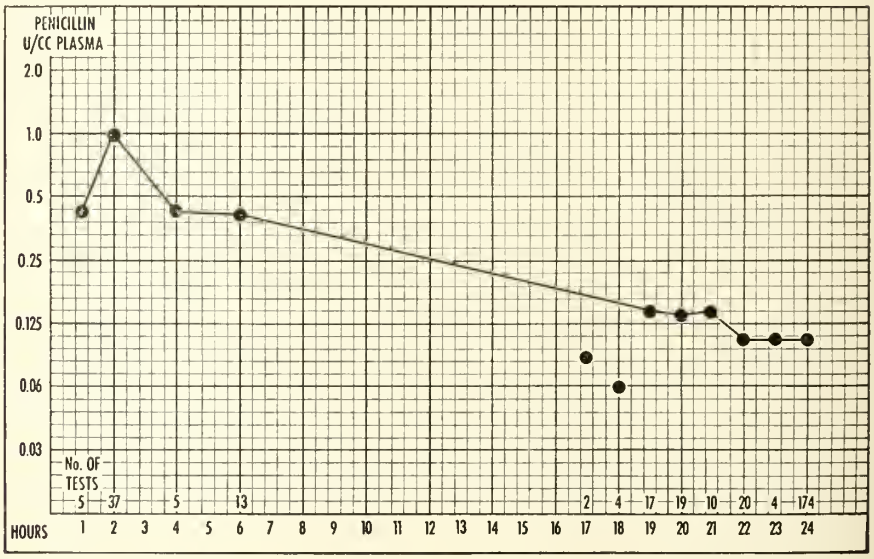
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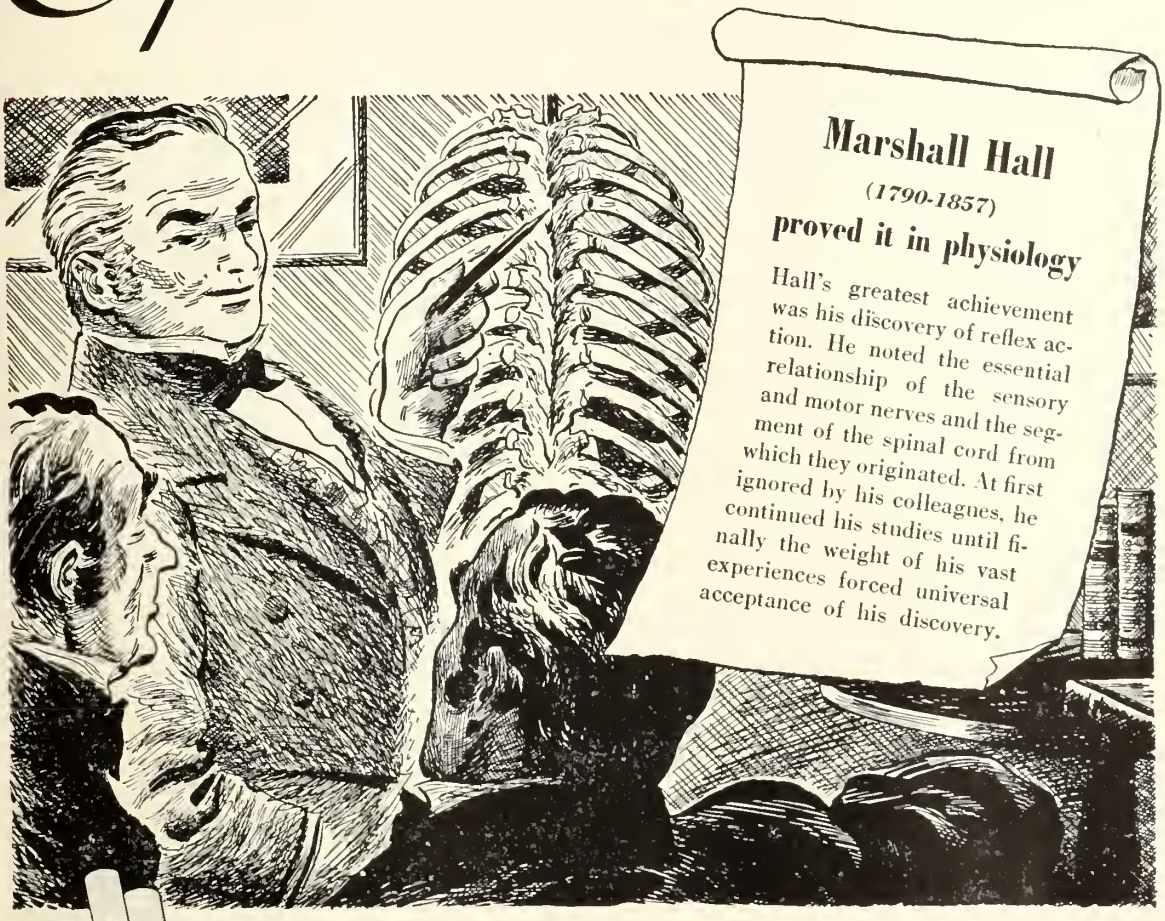
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SURGICAL GROUP ASKS SHORTER COURSES FOR BEDSIDE NURSES

(Continued from Page 34)

with patients who are being given inadequate care because of insufficient personnel.

"Many reasons are assigned for the shortage of nursing personnel. Demands for hospital service are greater than ever before; enrolment in schools of nursing is lower; the continual shortening of the work day and work week obviously requires increased personnel to meet the needs. The Veterans Administration has greatly increased its hospital facilities and proposes even larger increases for the future. Nurses are being attracted to full time positions in the field of industry, in physicians' offices, in public health agencies, in schools and in other capacities. Great numbers of nurses who enrolled in military service have failed to return to nursing practice. Finally, many nurses get married and discontinue practice of their profession.

"Leaders in the nursing and hospital fields propose a national campaign of recruitment to stimulate enrolment in nursing schools. Whereas 39,000 students were enrolled in nursing in 1938, only 31,000 were enrolled in 1946. Increased enrolment in nursing schools is not, however, the complete answer to the problem. The work of the nurses' aides during the war indicated the potentialities of meeting the demand for 'bedside nurses' by the utilization of intelligent women especially trained in the fundamental duties of making sick people comfortable. The extensive experience indicated that such women can certainly be trusted to take the temperature and respiration and to record them accurately. Many physicians and surgeons are convinced that

(Continued on Page 42)

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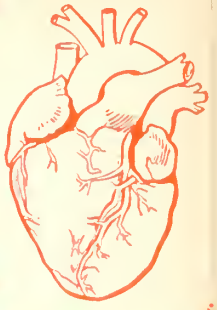
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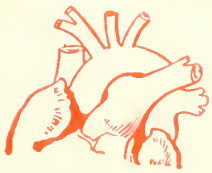
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SURGICAL GROUP ASKS SHORTER COURSES FOR BEDSIDE NURSES

(Continued from Page 38)

they could probably be trusted with routine medication except perhaps for narcotics and dangerous poisons. Many conferences have been held seeking a solution of the pressing need for nursing care. Leaders in medicine, hospitalization, nursing education and nursing may well heed the warning that comes from the American Surgical Association as to the imminence of this problem and agree on some immediate action toward a prompt solution of the problem."

The surgical association's report on the nursing problem in the United States was prepared after a questionnaire had been submitted to the entire membership. The report says in part:

Eighty-four per cent of the surgeons felt that "nurses' aides," equal in experience to those volunteers in wartime, and practical nurses, under the supervision of a nurse with three year training in charge of the ward, would provide a satisfactory solution of our nursing needs. There was almost complete unanimity in the feeling of the surgical profession that the increase in the required training for nurses beyond the three year level had not improved their ability to care for the sick and that it had not promoted closer cooperation between doctor and nurse in the care of the sick. . . .

Regarding help available for bedside nursing, it is notable that the American Medical Association's annual report of 1946 states that there were in registered hospitals some 80,000 practical attendants, not including orderlies and ward maids. There are now fifty schools of practical nursing approved either by the State Board of Nurse Examiners in states with legal control of the practice of the group or by the National Association of Practical Nurses' Education in states without a licensing law.

The nursing profession has not utilized this help. A closed

(Continued on Page 50)



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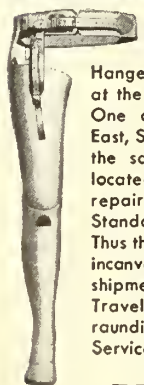
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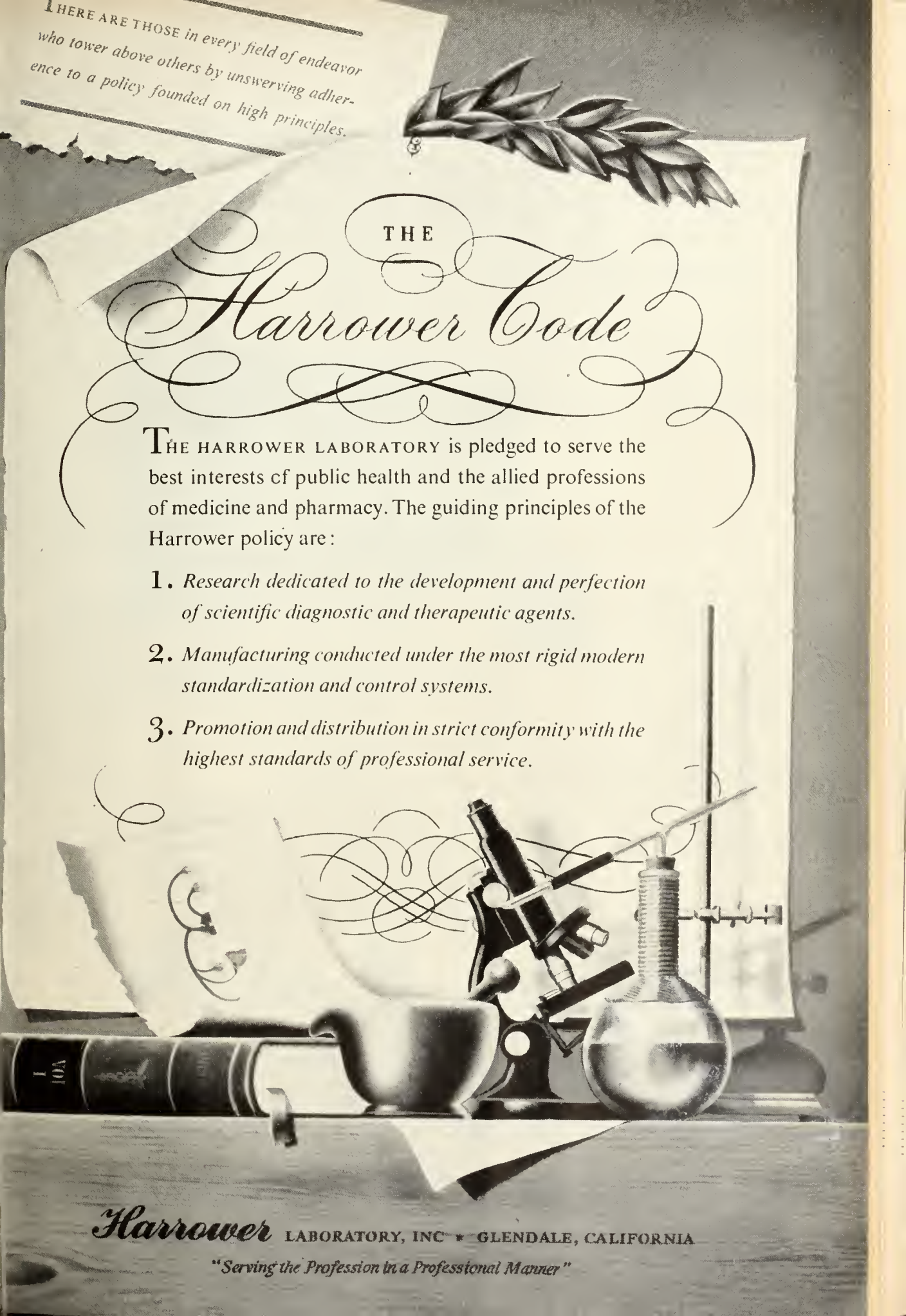
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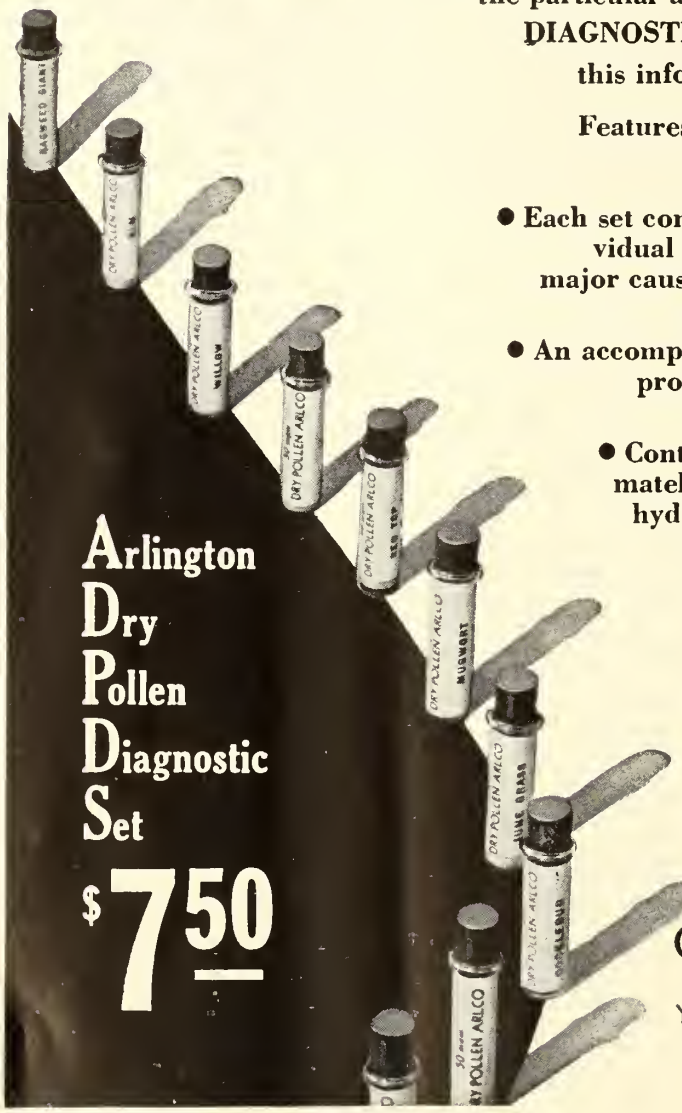
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SURGICAL GROUP ASKS SHORTER COURSES FOR BEDSIDE NURSES

(Continued from Page 42)

shop praetiee has prevailed widely and praetieal nurses have not been and are not allowed in many hospitals. Their assistanee to the siek has been denied. As noted, there has been expression of opposition to the training of hedside nurses in shortened eourses in our leading nursing schools. In some states it is prevented by law. While this has been the attitude of their eentral bodies, there is by no means general agreement in the nursing profession. Shortened courses have been reeommended by experieneed superintendents of nursing schools.

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The physicians—Arthur T. Ward, Jr., Samuel Livingston and Dean A. Moffat, from the Departments of Otolaryngology, Pediatrics and Allergy, division of the Medical Clinic, of the Johns Hopkins University School of Medicine and Johns Hopkins Hospital—state that 15 patients were completely relieved of asthmatic attacks; five children were relieved to such a degree that they have only an occasional mild attack; three children showed moderate improvement and 11 have obtained no relief.

The 34 patients were all under 14 years of age. They were chosen for this study because they had recurrent attacks of asthma and masses of adenoid tissue in the nasopharynx (the back of the nose). Twenty-four children had a family history of allergic disease and 18 children had allergic manifestations besides their asthmatic symptoms.

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(Continued on Page 58)

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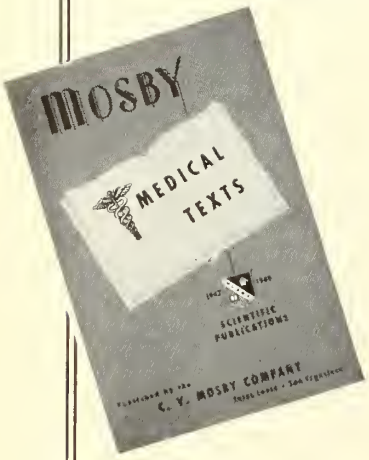
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URGE WIDER USE OF RADIUM FOR ASTHMA TREATMENT IN CHILDREN

(Continued from Page 54)

for an average of four treatments. The immediate effect of the radium on the respiratory tract differed in these children. Many complained of sneezing and nasal discharge for 12 to 48 hours after the exposures. In a number of children asthmatic symptoms developed several days after the first or second radium treatment, and the attacks were ocassionally severe.

In conclusion, the authors state that the "object of this report is to arouse interest in this new form of therapy, so that its larger use may prove and extend the true value that we consider evident from the results of this detailed study and from experience with hundreds of cases not included herein."

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(Continued on Page 66)

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[1]Human Fertility 10: 25 (Mar.) 1945.

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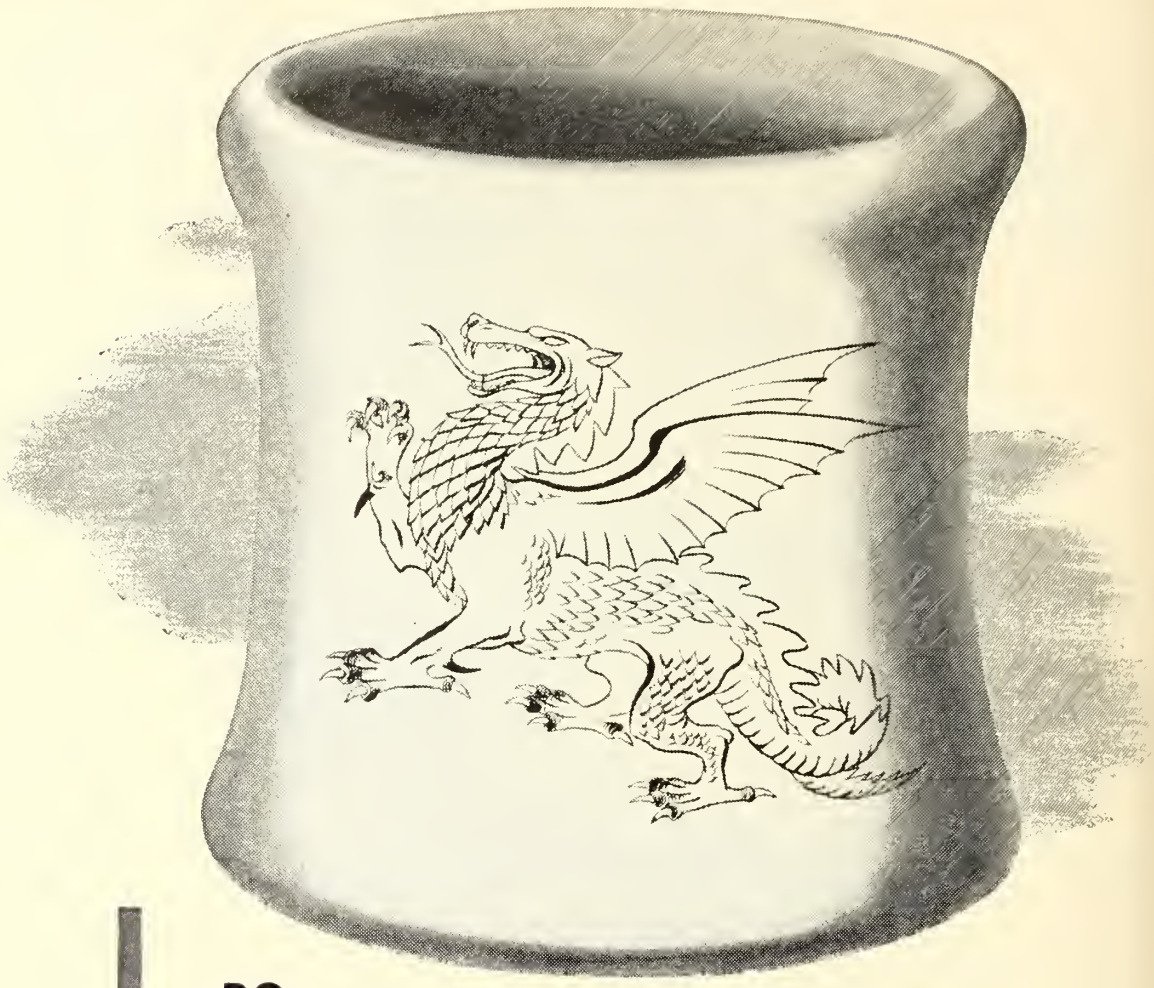
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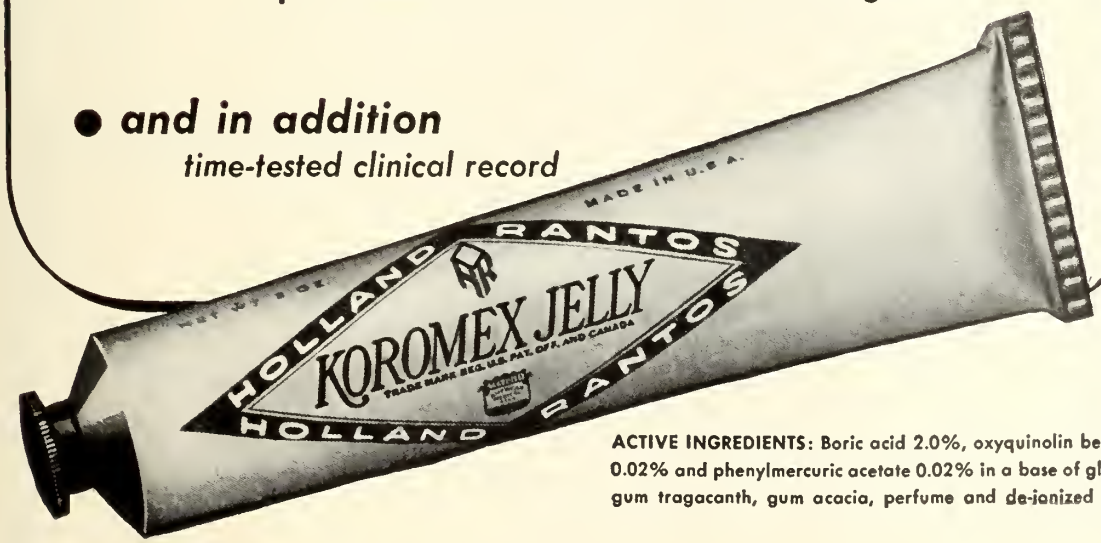
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A.M.A. HITS ANTIVIVISECTIONISTS' BALLYHOO OVER BILL

(Continued from Page 58)

victory. Actually no reasonable person objected to the bill and it was wholly unnecessary anyway. The bill really duplicated existing legislation. Under the general laws of New York State protecting property rights the stealing of dogs was already a felony. There may be occasional criminals that steal people's pets; what they could get out of it by selling such animals to laboratories would hardly pay for the trouble. Any reputable research institution does its utmost to avoid receiving such animals. Perhaps some of the members of antivivisectionist groups are beginning to wonder what is being done with the funds that the executive secretaries continuously solicit. Those interested in protecting research cannot relax their vigilance. The fanatics will try to put over restrictive legislation of real significance on unsuspecting legislators just as soon as they see an opportunity."

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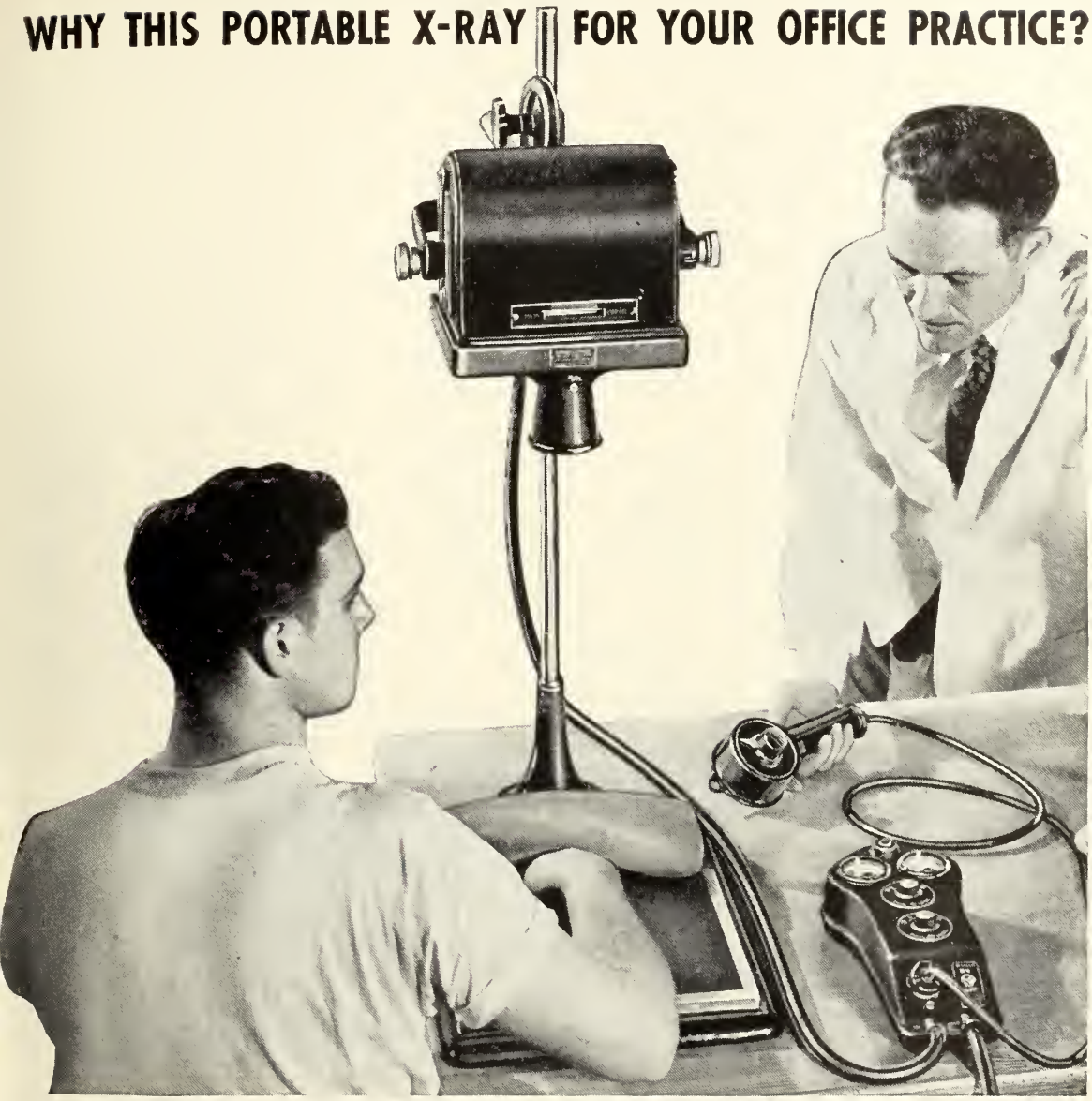
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Sacramento—Business and Professional Building, 1020 N Street, Room 536.
Secretary, Frederick N. Scatena, M.D., 1020 N Street, Room 536, Sacramento 14.

Medical Society of State of California

Optional Medical Defense—C.M.A. Members. 131 South Rampart Blvd., Los Angeles 4, c/o G. H. Kress, M.D.

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Executive Secretary, Ben H. Read, San Francisco office, 251 Kearny Street 8, phone SUtter 8470, Los Angeles office, 108 West Sixth Street 14, TUcker 9069.

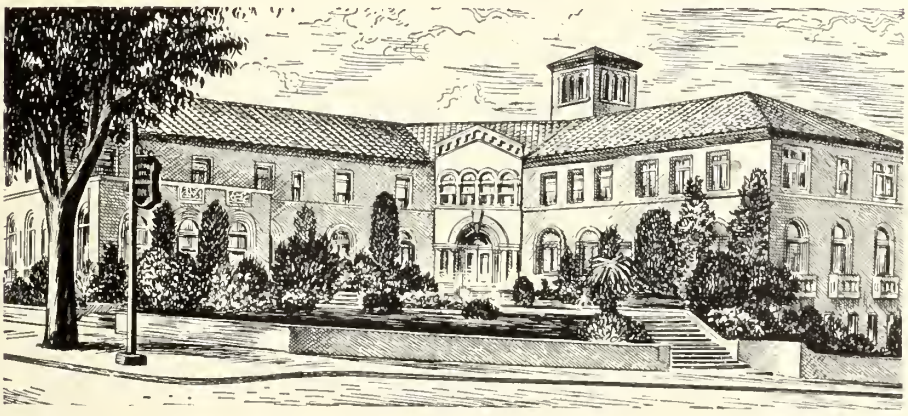
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Stanford University School of Medicine, 2398 Sacramento St., San Francisco 15.
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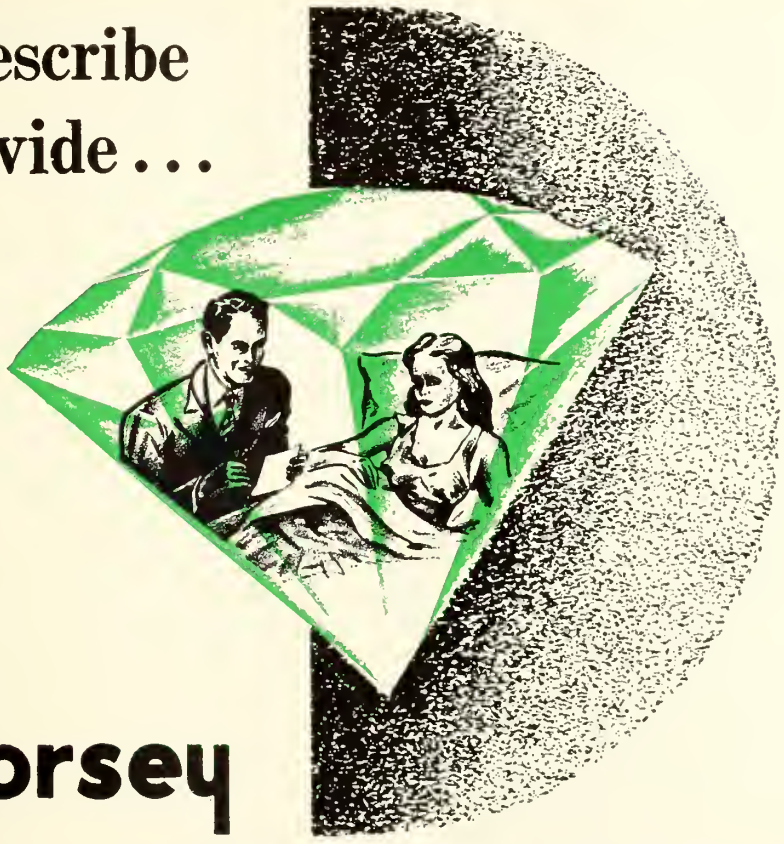
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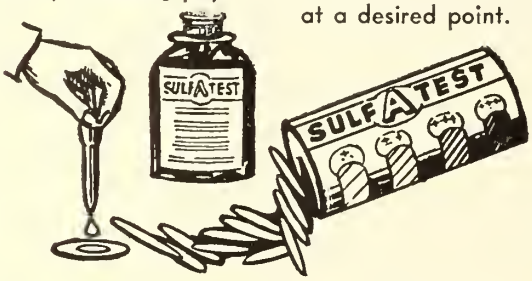
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(Continued from Page 8)

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YOUNG PHYSICIAN licensed in California is available for general assistantship; upon completing year's rotating internship had year's residence in obstetrics, two years' general army hospital work; expects discharge during summer; at that time would like to return to California; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

INTERNIST, Diplomate, particularly well qualified in cardiology; four years' military service; recently completed graduate training in cardiology; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

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URGES COMMUNITY PROGRAM FOR CANCER CONTROL IN U. S.

A community program for cancer control is urged by James R. Miller, M.D., of Hartford, Conn., in the current issue of *Hygeia*, health magazine of the American Medical Association.

Dr. Miller points out that the community is not concerned with long range objectives that necessitate research but rather the community wants to know how to make maximum use of the methods that are already available. These methods for the present, he states, are limited to surgery and treatment with x-rays, radium rays and other radiation, although new discoveries may rapidly become available for general use.

"Maximum efficiency with our present methods," writes Dr. Miller, "requires early recognition of symptoms, early diagnosis, prompt treatment and adequate treatment. These four objectives can be secured by an intensive educational program both for the public and for the medical profession. But, education is not enough. Facilities must be available for diagnosis and treatment."

The American Cancer Society has issued a service manual that will serve as a guide for programs of its various state divisions and local units. General policies of the program were approved by the House of Delegates of the American Medical Association in December and the American Cancer Society will work in accord with the medical profession.

Because the scope and need for such programs can best be determined by local conditions, approval by the county medical societies is required for local service projects that are supported by funds of the American Cancer Society. The American Cancer Society does not own nor operate clinics but it supplies funds, volunteer assistance and expert advice in helping develop and coordinate the resources of the medical profession, hospitals, public health services and all other health agencies interested in the cancer problem.

Dr. Miller suggests that a community program for cancer control should include:

An information service where people may obtain facts about cancer and the services that are available in the community for its control.

A detection center where apparently well people may receive a general examination, the primary object of which is to disclose unsuspected disease.

A cancer diagnostic clinic where persons who have signs and symptoms suggesting cancer may go for certain diagnosis.

A cancer clinic where in addition to diagnostic service there is a staff and equipment capable of providing complete treatment.

The American College of Surgeons gives its approval to hospitals and to cancer clinics that meet its minimum standards and in December, states the author, the college also agreed to inspect and approve detection centers meeting its minimum standards.

"It is certain that the number of persons who should be subjected to routine examinations is so great that decentralization must take place and the contacts with the medical profession must be multiplied," according to the *Hygeia* article. "Ideally, the cancer detection function should be in every doctor's office. We must realize, however, that many physicians are so busy with the care of those who are actually sick that they do not have time to spend with persons desiring a prophylactic examination. . . . Busy general practitioners will no doubt appreciate having at their disposal a detection center which would give a rapid screening examination and refer the findings back to them."

An advantage of detection centers, points out the author, is that full use can be made of auxiliary medical services such as laboratory assistants, nurses and clinical clerks, so that a screening type of examination can be performed in about 15 minutes.

However, states the author, "it should be the general

(Continued on Page 16)

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Swift's Strained Meats

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Good food plays a psychologically as well as a physiologically important part in aiding recovery. This is one reason so many doctors are now using Swift's Strained Meats for patients on high-protein, low-residue diets containing chemically and physically non-irritating foods. Swift's Strained Meats provide a palatable, *natural* source of complete, high-quality proteins, B vitamins and minerals for patients whose condition prohibits the use of meats prepared in the ordinary manner. Each of the six kinds: beef, lamb, pork, veal, liver and heart, offers a tempting, distinctive meat flavor more readily accepted by patients, even when normal appetite is impaired.

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For soft, smooth, high-protein and low-residue diets, these small cubes of lean meat offer new convenience and appetizing variety. Swift's Diced Meats are tender juicy pieces of meat, easily mashed into smaller particles if desired. 5 ounces per tin.



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URGES COMMUNITY PROGRAM FOR CANCER CONTROL IN U. S.

(Continued from Page 12)

policy of detection centers not to see a patient a second time except on the request of his physician or of a suitable clinic. Continuing responsibility for the patient's welfare must not be assumed by a detection center."

In conclusion, Dr. Miller writes: "Public interest in cancer is finding expression in the development of programs on a state and national level involving large sums of money. The last Congress appropriated two and one-half million dollars to be apportioned among the states for cancer work. . . . The Hill-Burton Bill or the Hospital Construction Bill now Public Law No. 725 should be kept in mind when we consider the cancer problem. Although the Hill-Burton Bill provides funds for hospital construction, nevertheless some of it can be spent for health centers. These will afford suitable housing for some of the consultative work."

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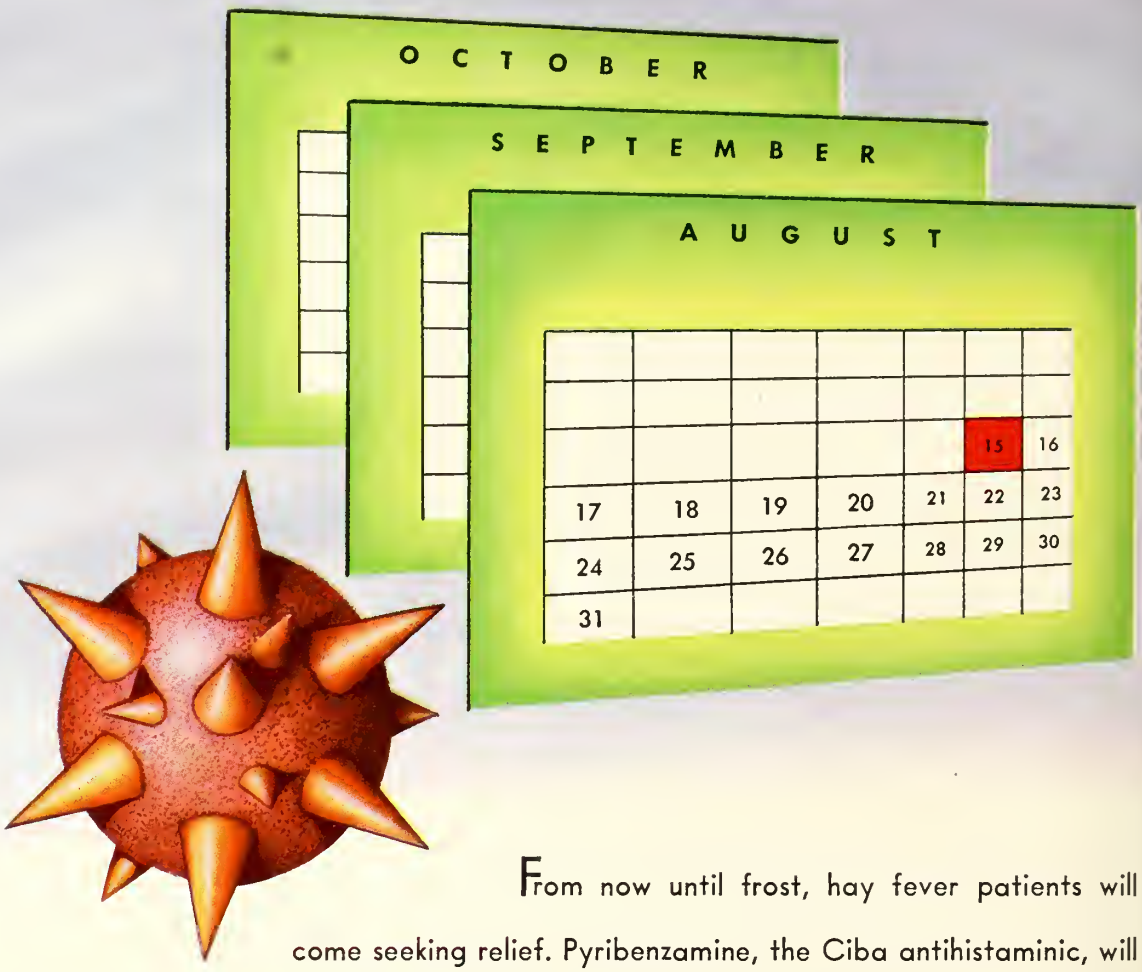
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A Swedish social welfare committee, investigating the incidence of disease in state-aided day nurseries, found that nursery children were more susceptible to disease than children who stayed at home, according to the Stockholm correspondent of *The Journal of the American Medical Association.*

Writing in the April 26 issue of *The Journal,* the correspondent states that according to the report "many of the nursery children have had colds for long periods and many have constant fever. Ear infections are far more numerous. Sinus and kidney inflammations have appeared among the nursery children, but not in the control group [children who stayed at home]. Bacteriologic studies revealed that certain types of bacteria, which do not ordinarily appear in epidemic form, have caused minor epidemics at the nursery and that children are hardly recovered from one infection before they contract another or are perhaps infected with several types of bacteria simultaneously."

The investigating committee made recommendations for the installation of ultraviolet lamps and the impregnation of floors and textiles with oil to reduce the risk of infection. "With such a large percentage of Swedish mothers out at work every day," states *The Journal* correspondent, "these nurseries are of the utmost importance in the present state of society."



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By Frederick N. Scatena, M.D.
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Board Proceedings

The Board of Medical Examiners held a meeting at the St. Francis Hotel in San Francisco, July 7 to 10, 1947. Written examinations were conducted for 160 applicants for physician's and surgeon's certificates and 16 for chiropody certificates.

The following changes were made in the status of licentiates of the Board at the meeting:

Albert Peterson, M.D.—Found guilty of the charges set forth in the accusation and his license was revoked.

Melvin A. Shade, M.D.—Found guilty of the charges set forth in the accusation and his license was revoked.

Lewis B. Weatherbee, M.D.—Found guilty of the charges set forth in the accusation and his license was revoked.

Paul Hutcheson Woods, M.D.—Found guilty of a violation of Section 2391 of the Business and Professions Code; his license was suspended for one year with probation for five years following the suspension.

Harry L. Ryberg, D.S.C.—Found guilty of violation of Sections 2142, 2376, 2386, 2395, and 2396 of the Business and Professions Code. His license was revoked.

* * *

News

"Try First Birth Control Case Here—Facing the first complaint of its kind ever issued in Los Angeles by the district attorney's office, Dr. Lamar Porter, 1419 Hauser Boulevard, was slated to appear in Municipal Court today for preliminary hearing on a felony charge of violating the Business and Professional Code by advertising a patented birth control device. . . . The complaint, signed by Cecil A. Mead, special agent for the State Board of Medical Examiners, alleges that Dr. Porter sent form letters to married women, offering his device for sale for $35. . . . Four Los Angeles women, who received the unsolicited letters from him shortly after they gave birth to children, were scheduled to testify, according to district attorney's office investigators."—(Los Angeles, Calif., *Herald & Express*, June 4, 1947.)

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PHYSICAL FITNESS SHOULD BE MEASURED BY EMPLOYABILITY

Physical fitness should be measured by employability rather than by the stringent standards of the wartime armed services, according to Jean Spencer Felton, M.D., of Oak Ridge, Tenn.

Writing in the current issue of *Occupational Medicine*, published by the American Medical Association, Dr. Felton, who is Superintendent of the Health Department, Monsanto Chemical Co., Clinton Laboratories, analyzes 10,834 consecutive preplacement physical examinations conducted during 1944-1945, for placement of workers in 67 different occupations, 56 of which were capable of being filled by women.

On the basis of physical findings, the workers were classified as A, physically qualified for all positions, B, physically fit for restricted work only and C, physically disqualified. The study showed 98.8 per cent (physically fit plus physically impaired) to be employable, and only 1.2 per cent physically unqualified to fill any of the numerous available positions.

Among the men in group B, the predominant diseases diagnosed were of the bones and joints (264), cardiovascular-renal (pertaining to the heart, blood vessels, and kidney) diseases (242), disease of the eyes (197) and hernia (111). Cardiovascular-renal diseases (80) led the list of diseases

(Continued on Page 24)



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PHYSICAL FITNESS SHOULD BE MEASURED BY EMPLOYABILITY

(Continued from Page 22)

experienced by women, followed by endocrine disorders (64), diseases of the eyes (38) and diseases of the bones and joints (33).

Dr. Felton concludes that: "While decrying the physical status of rejected candidates for military service, this same school has failed to demonstrate the most important quality possessed by these men, specifically, their employability. Insufficient emphasis has been laid on the worth of these men as capable workers in the industrial scene, where less stringent physical standards will allow this group to become economically sound through accurate studied job placement. Tight though the labor market was during the war years, hundreds of thousands of men and women workers streamed to industries, performing heretofore unfamiliar tasks, spending long hours in the changing environment of plants being converted to wartime production, living in the crowded areas of boom cities, developing new work technics—all this being done by many with definite physical impairments. That industry can and has used the limited worker has been demonstrated repeatedly, for it is realized 'that there is no such thing as a sub-standard worker under a selective placement program.'"

Differences among the four racial groups (Negro, Chinese, Filipino and White) were: incidence of allergy and cardiovascular-renal conditions among the yellow applicants was significantly higher than among the white or the Negro applicants; incidence of malformations was significantly higher among the yellow candidates than among the white and

(Continued on Page 26)

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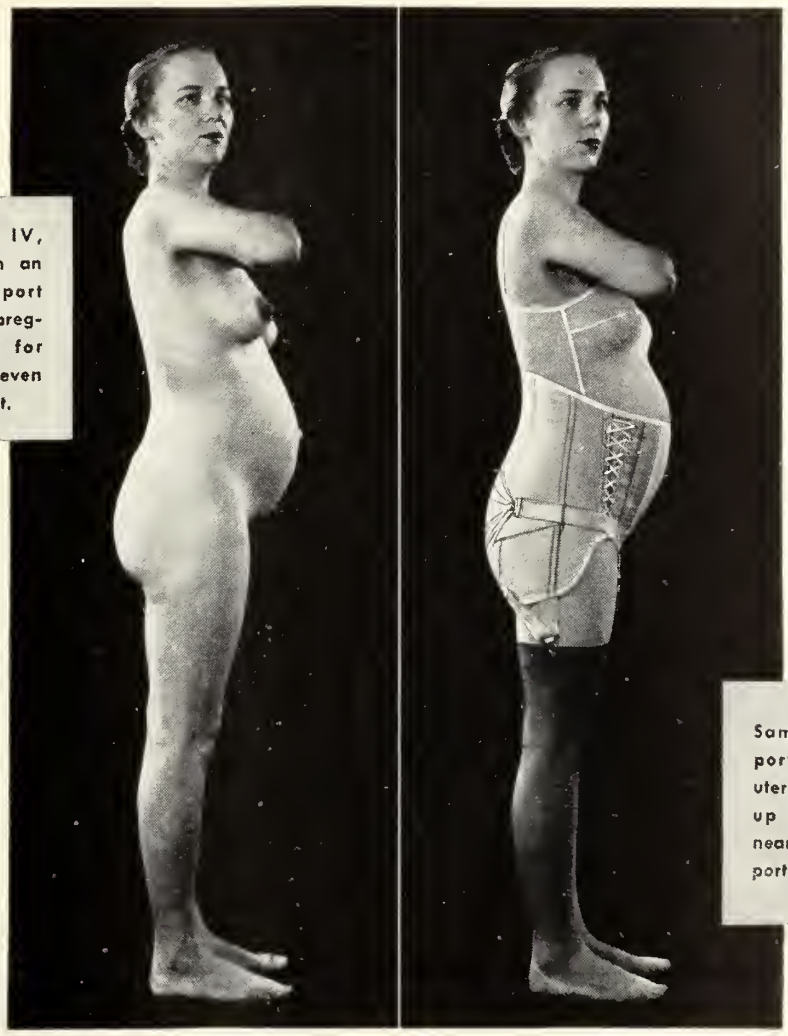
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PHYSICAL FITNESS SHOULD BE MEASURED BY EMPLOYABILITY

(Continued from Page 24)

incidence of diseases of the bones and joints was significantly higher among the Negro group than among either the white or the brown groups.

Outstanding, however, states the author, is the fact that of the 1,041 Negroes examined, 24.60 per cent gave positive reactions to syphilis tests. The Chinese ran second (17.65 per cent) and 13.64 per cent of the Filipinos showed latent syphilis.

"A significant difference is noted between the white and all other groups, or between the brown and the Negro group in this connection," writes Dr. Felton. "Other than those mentioned, there are no significant differences among the four racial groups."

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DDT has proved safe and effective in the treatment of head lice on children, according to the April 26 issue of *The Journal of the American Medical Association.*

One hundred and seventy-three school children were treated by the Texas State Department of Health for head lice with a dust composed of 10 per cent DDT and 90 per cent pyrophyllite, a mineral used for diluting powders.

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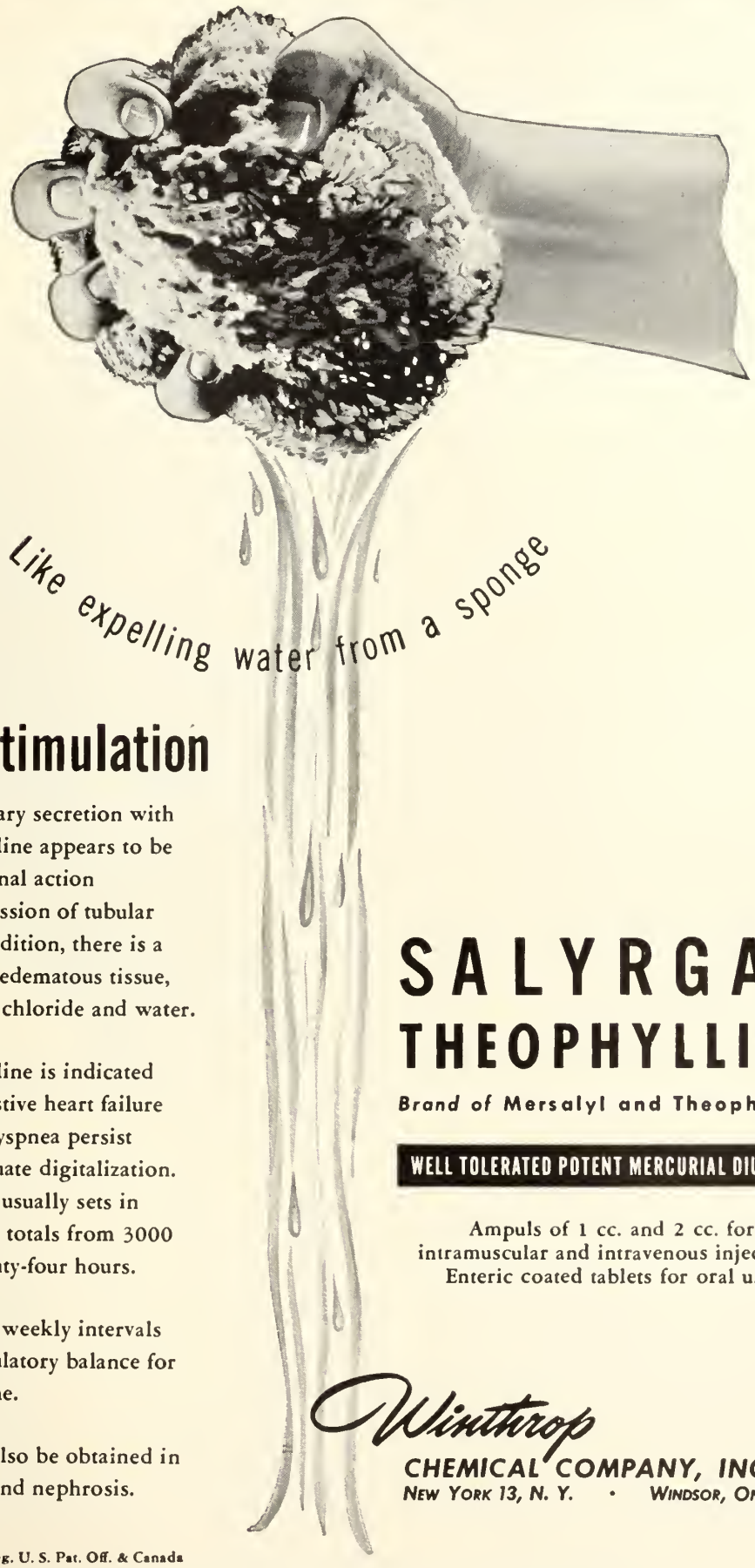
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MANY PATIENTS HAVE EMOTIONAL ILLNESS COMPLICATING PHYSICAL DISEASE

At least one half of all patients have their symptoms as a result of emotional difficulties in addition to and as a part of the physical disease, according to Raymond W. Waggoner, M.D., of Ann Arbor, Mich.

"Every patient will respond more promptly to treatment of any disease if the physician understands and adequately handles the emotional as well as the physical aspect of the illness . . . therefore it is essential that every physician, whether he is in general practice or in a specialty, obtain some understanding of psychiatric principles and utilizes these principles in the treatment of all of his patients," states the author.

Writing in the June 28 issue of *The Journal of the American Medical Association*, Dr. Waggoner, Professor of Psychiatry at the University of Michigan, points out that only about two per cent of the registered physicians in this country are trained in psychiatric procedures; therefore the task of treating emotional illness falls upon the general practitioner.

"Recognition of the importance of emotional factors in illness, a willingness to spend more time with such patients, an understanding of some of the motivating factors in such conditions and the ability to help in the solution of such problems is an essential characteristic of every good physician," states the author.

The physician cautions that since patients tend to exaggerate symptoms of physical illness, great harm can be done by the prescription of unneeded rest.

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DOCTOR RECOMMENDS STEPS TO AVOID REACTION FROM FLU VACCINE

An allergic reaction following injection of influenza vaccine, which caused death of a child, is reported by a Hempstead, N. Y., physician in the April 12 issue of *The Journal of the American Medical Association.*

Theodore J. Curphey, M.D., from the office of the Chief Medical Examiner, Nassau County, Meadowbrook Hospital, states that a very real danger exists in the administration of influenza and other vaccines prepared from cultures grown in chick embryo without first giving the patient a skin test to determine whether he is sensitive.

The author, explaining why there have been few deaths reported from allergic reactions in the past, states that "from available evidence it would appear that the percentage of sensitivity to egg protein in the general population is not greater than 10 per cent of the total number of allergic people. The estimate of the allergic population lies in the vicinity of 10 per cent, so that normally only one per cent of the general population can be regarded as allergic to egg protein. . . . It is known, however, that allergic children are generally more sensitive than adults."

The author recommends that attempts be made to purify further the various virus vaccines now becoming generally used so as to diminish the amount of reacting egg substances. He also recommends that patients receive skin tests for sensivity to eggs and, if the skin shows a positive reaction, that the vaccine be administered in divided doses at short intervals.

In conclusion, the author says that "if the simple precautions which have been outlined are observed there should be little or no danger in continuing the vaccination of the civilian population with these agents, which the accumulated evidence shows to have definite immunizational value."

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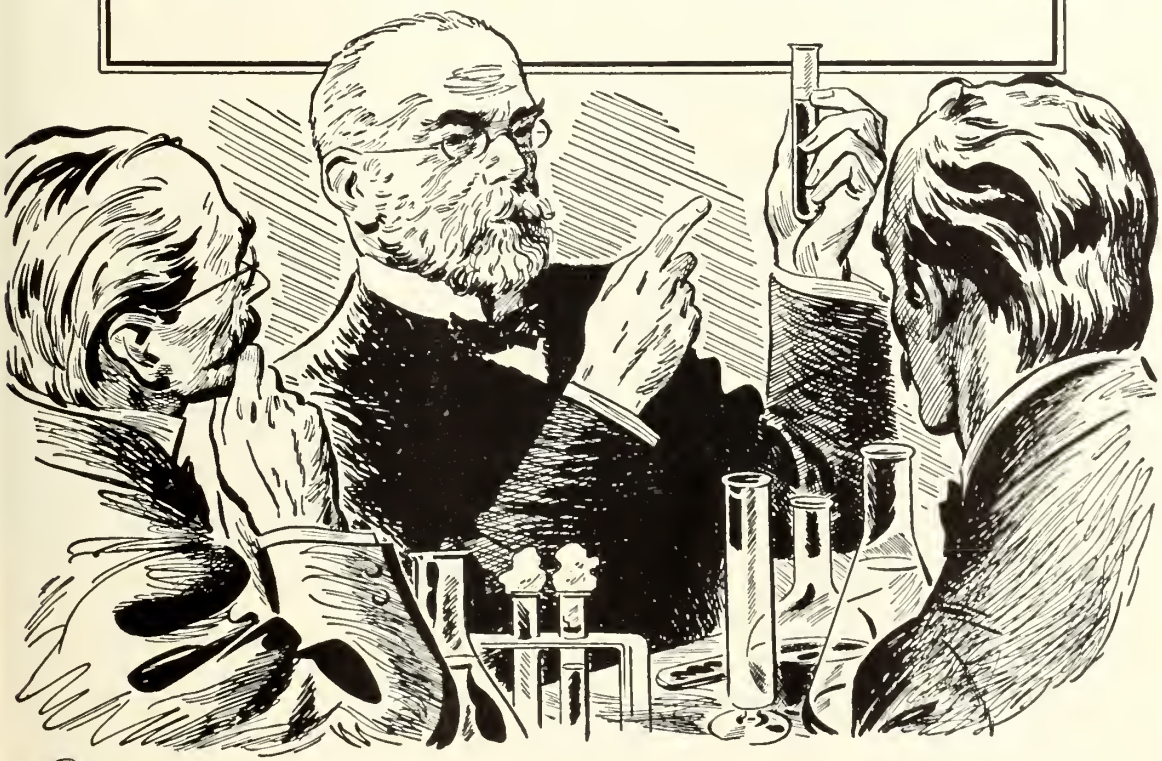
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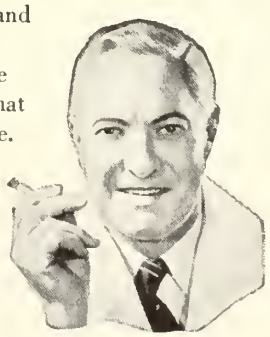




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So advises the National Research Council's Committee on Convalescence and Rehabilitation (War Med. 6:1, 1944).

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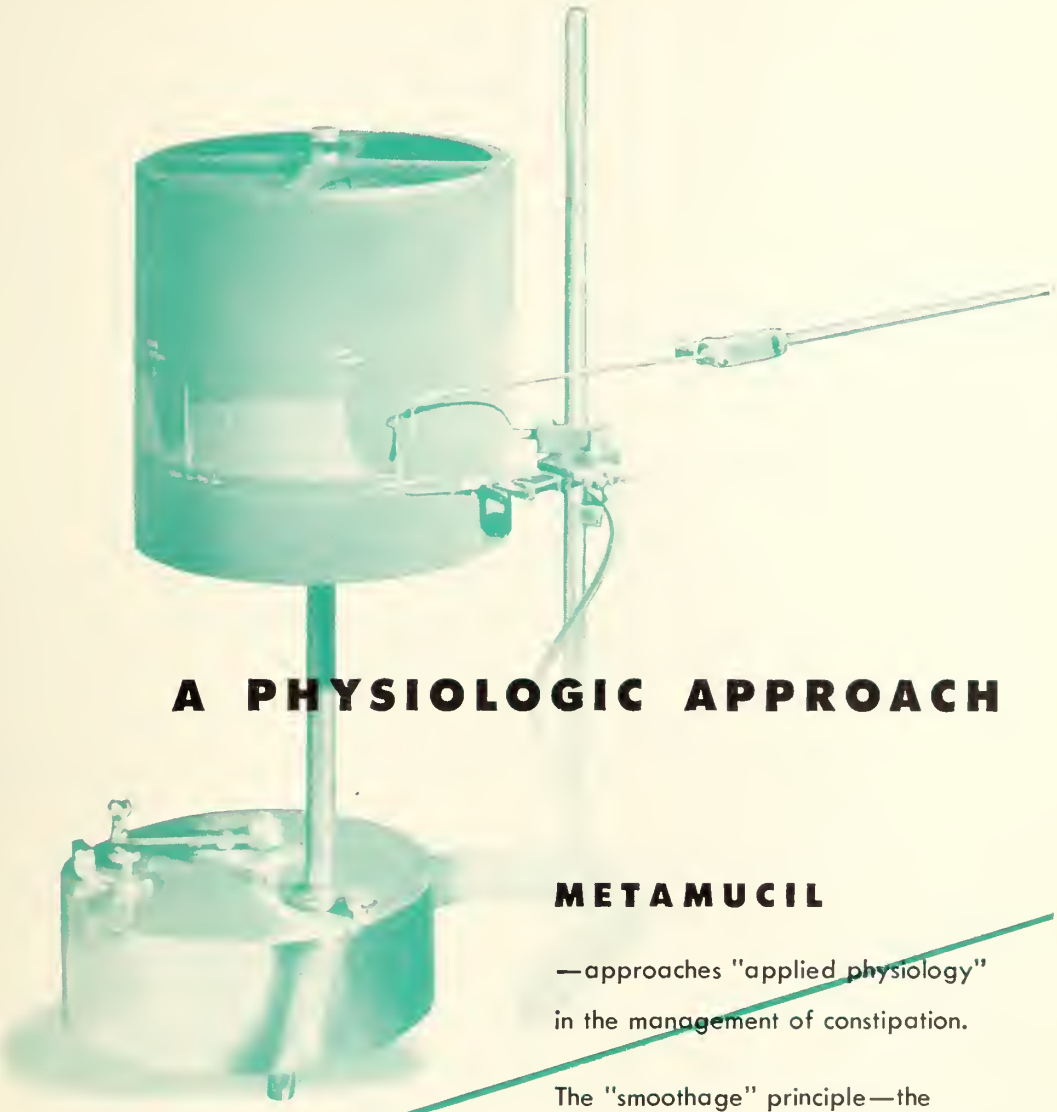
Illustration by Herman Giesen

Riddle of the Swamps

AS EARLY as the fourth century B.C., Greek physicians suspected that marshy lands had some connection with malaria. It was not until 1894, however, that Sir Patrick Manson, English physician, advanced the hypothesis that malaria was transmitted by the mosquito. At Dr. Manson's suggestion, Sir Ronald Ross not only traced the development of the parasite in the mosquito but infected healthy birds with malaria. A riddle of many centuries was finally solved!

This epochal discovery indirectly led to the development of millions of acres of fertile bottom lands formerly considered unfit for healthful habitation. It then became a problem for the engineer to develop techniques of drainage and reclamation.

Removal of major breeding places for the mosquito, although important, is not the whole solution to the problem. Effective drugs are still needed. Research on new and more efficient antimalarial agents continues in the Lilly Research Laboratories.



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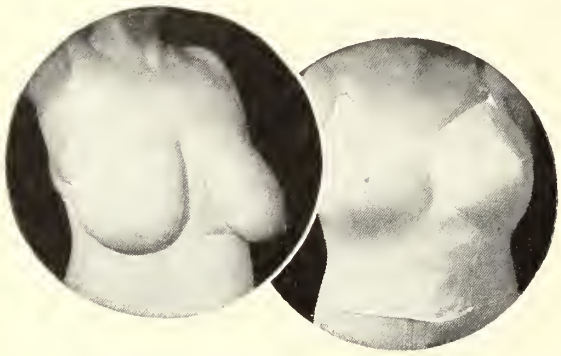
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[1]Nicolson, William Perrin, Atlanta, Georgia, from the paper *Carcinoma of the Breast—Its Treatment and Prevention* delivered at Southeastern Surg. Cong., March 10, 1947: [2]Rosh, Rieva, *An Appeal To The General Practitioner For Early Recognition and Treatment of Breast Malignancies*, Med. Woman's Jr.: 10:41 (Feb.) 1943.

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DOCTORS WOULD FAVOR NATIONAL SERVICE BILL IN EVENT OF WAR

A national service bill that would require all doctors to serve the government in some capacity in the armed forces or in civilian communities in the event of another national emergency has been proposed by physicians who recently were surveyed as to their opinions by the American Medical Association.

Approximately 5,000 questionnaires were sent to physicians, selected at random, who were in civilian practice during the war, by the Committee on National Emergency Service of the A. M. A., of which Dr. Edward L. Bortz, Philadelphia, president-elect of the association, is chairman. The questionnaire provided an opportunity for those who were responsible for civilian care in those years to indicate what changes should be made in the mobilization of medical service in future emergencies.

Frank G. Dickinson, Ph.D., Director of the Bureau of Medical Economic Research of the A. M. A., presents an analysis of 2,322 answering questionnaires in the May 24 issue of *The Journal*.

More than three fourths of the physicians indicated that in the event of another national emergency, a board representing the medical profession should be empowered to set the policy for the utilization of all physicians. The overwhelming majority of those favoring this policy said that this board should set the policy for the utilization of both military and civilian physicians.

Approximately 60 per cent of the doctors also voted their agreement to a national service bill that would require all physicians to serve the government in some capacity in the armed forces or in civilian communities.

Other results of the survey indicated that:

68.3 per cent of the doctors believe that all qualified civilian physicians should be required to serve in rotation on Selective Service Boards in their communities in the event of another national emergency.

65.6 per cent of the physicians feel that if more doctors had been released from their communities for military service it would have endangered the welfare of the civilian population.

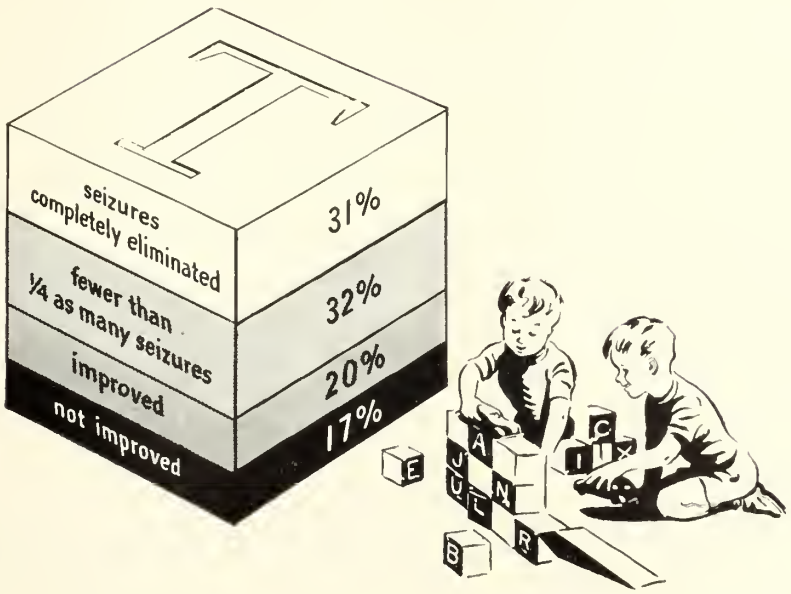
55.8 per cent of the doctors believe that the community could not have been served in a reasonably adequate manner if there had been a large scale epidemic; 44.8 gave as one reason the insufficient number of physicians; 46.9 per cent gave an insufficient number of nurses as the reason; 7.9 gave inadequate supply of commonly used drugs and equipment and 6.8 per cent gave insufficient hospital facilities as the reason.

53.3 per cent think that civilian nursing and technical personnel was unduly and dangerously reduced by induction into the armed forces.

This cross section of physicians also indicated that they treated 6 per cent more patients in 1944 than in 1941 and were called on during this period to see approximately three fourths more patients.

Dr. Dickinson feels that it is significant that 80.8 per cent of the physicians favor the formation of mobile civilian medical teams to supply areas stricken by epidemics and atomic or bacteriologic warfare. "It seems clear," states the author, "that if 81 per cent of the doctors are willing to support the formation of mobile civilian medical teams they are certainly aware that in the next war the task of taking care of civilians 'after the storm' may be a greater medical problem than the medical care of military personnel. The vote on this question clearly indicates that the civilian

(Continued on Page 36)



83% of petit mal cases improve with Tridione

Here's new evidence of the effectiveness of Tridione in the treatment of petit mal. In a recent study, Tridione was given to 166 patients suffering from petit mal (pyknoepilepsy), myoclonic jerks or akinetic seizures.[13] This group as a whole had received but mediocre benefits from other medicaments. With Tridione, 31% of the 166 became free of seizures; 32% had fewer than one-fourth of the previous number of seizures; 20% improved to a lesser extent; 13% remained unchanged, and only 4% became worse. *Thus 83% showed improvement.* In some cases the seizures *did not return* after Tridione was discontinued, the longest seizure-free period thus far being 18 months. Studies also have shown that Tridione is of benefit to certain psychomotor patients when given in conjunction with other antiepileptic drugs.[12] Tridione is available through your pharmacy in 0.3-Gm. capsules and in pleasant-tasting aqueous solution containing 0.15 Gm. per fluidrachm. Capsules in bottles of 100 and 1000; solution in 1-pint and 1-gallon bottles. If you wish to know more about Tridione, just write to ABBOTT LABORATORIES, North Chicago, Illinois.

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DOCTORS WOULD FAVOR NATIONAL SERVICE BILL IN EVENT OF WAR

(Continued from Page 34)

doctors of America are aware of the serious implication of possible atomic and bacteriologic warfare."

A series of questions asking the physician to state his opinion as to which of the listed civilian services were unnecessarily depleted in his community were checked as follows: 46.1 per cent checked hospital facilities as being unnecessarily depleted, 34.4 per cent checked private practice, 12.4 per cent checked medical education, 6.5 per cent checked public health, 2.7 per cent checked industrial medicine and one per cent wrote "Nursing" in the blank for Other.

SURGERY GIVES RELIEF TO MANY HIGH BLOOD PRESSURE PATIENTS

Two groups of Boston investigators report the beneficial effect on patients with high blood pressure following extensive removal of the sympathetic nervous system, which runs alongside the spinal cord, in the May 3 issue of *The Journal of the American Medical Association.*

The sympathetic system acts independently of the central nervous system, functioning unconsciously. It controls the arterioles, which are the smallest branches of the arteries, making them constrict (tighten up) during emotional stress. When they constrict, less blood can get into them from the arteries, and so the pressure of blood in the arteries goes up.

(Continued on Page 38)



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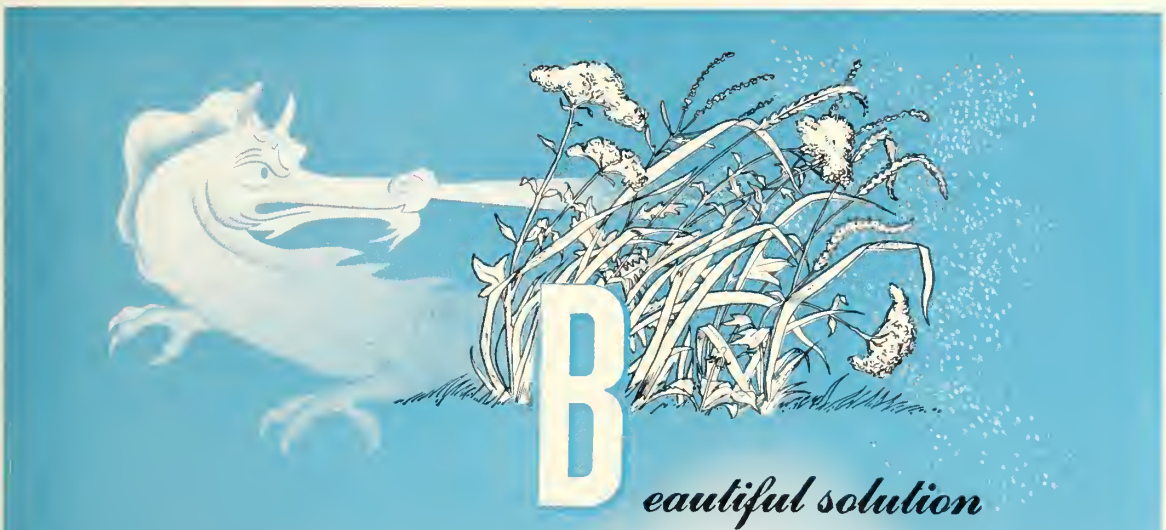
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SURGERY GIVES RELIEF TO MANY HIGH BLOOD PRESSURE PATIENTS

(Continued from Page 36)

High blood pressure, therefore, means that through some nervous or toxic influence the arterioles throughout the body are kept more or less constantly in a constricted state.

James L. Poppen, M.D., Department of Neurosurgery, and Charles Lemmon, M.D., fellow in neurosurgery, at the Lahey Clinic, present the results of this type of surgery on 100 patients with high blood pressure. They state that the results were good in 47 per cent, fair in 24 per cent, unsatisfactory in 22 per cent and fatal in seven per cent.

"One must not fail to realize that hypertension [high blood pressure] is the leading cause of death and is four times as deadly as cancer," state the doctors.

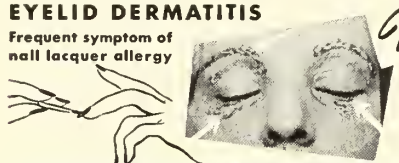
They believe that at present surgery for high blood pressure "increases longevity besides relieving symptoms and lowering the blood pressure. . . . The criticism of this operation lies in the fact that the patient is hospitalized for a period of about four weeks."

Patients were carefully chosen for this type of operation. Patients over 50, patients who had a badly damaged heart, blood vessels or kidneys, or patients with early and mild cases of high blood pressure were not chosen for surgical treatment.

Another investigator, Robert S. Palmer, M.D., from the medical and surgical services and the Hypertension Research Committee, Massachusetts General Hospital, Boston, states that in November, 1943, the status of 101 patients was reviewed. All had been treated by surgery involving extensive removal of the sympathetic nervous system. Sixty-two had been followed for one year or less after operation, 22 for one to two years, 11 for two to three years and three patients up to four years. Thirty-eight, or nearly 40 per cent, had normal or near normal blood pressures.

Three years later the results of surgical treatment were again evaluated medically with a review of 68 patients. Forty-seven of these patients are living; 16 of them with normal or near normal blood pressures and eight with blood pressures entirely normal. Twenty-one of the 68 patients had died.

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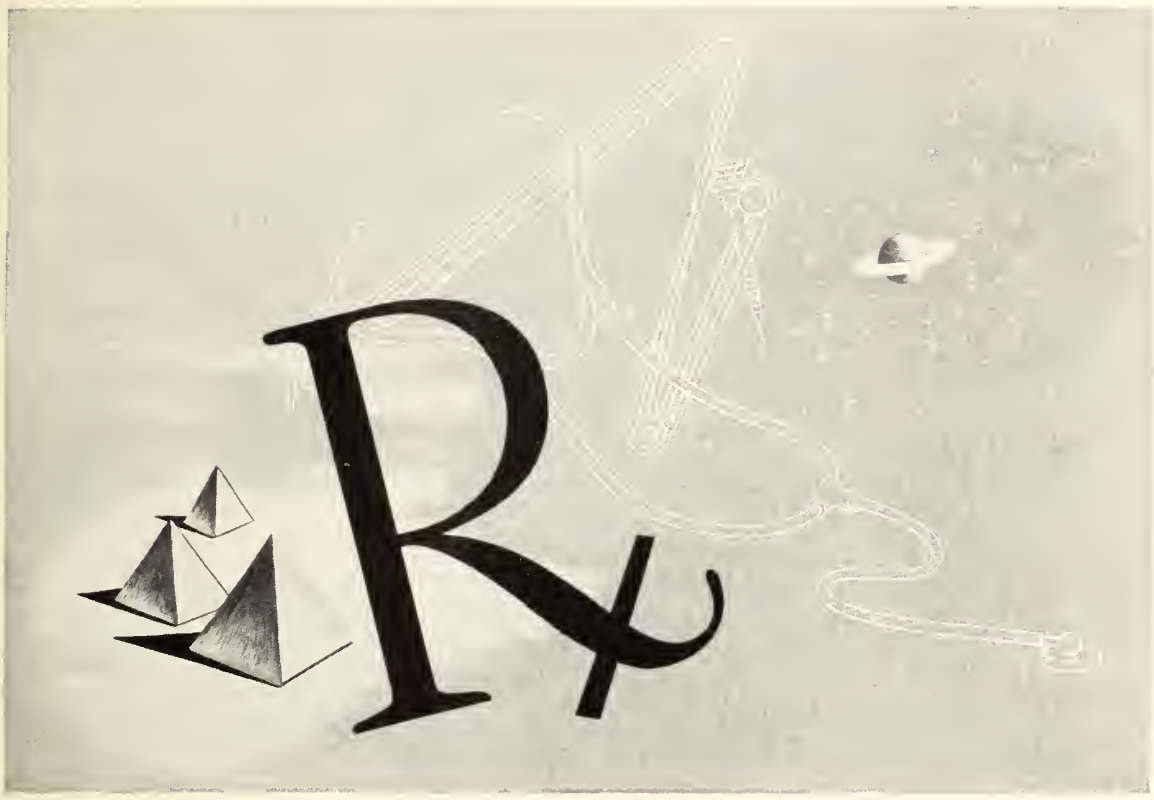
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Between those prescriptions—about 2030 B.C., in the Code of Hammurabi—broke the dawn of malpractice law. (*"If the doctor has caused a gentleman to die, one shall cut off his hands . . . if he has caused a slave's death, he shall render slave for slave."*)

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TUBERCULOSIS PATIENTS REACT WELL TO PURIFIED STREPTOMYCIN

Four New York doctors report that reactions to highly purified streptomycin on long-continued administration are sufficiently low to justify the use of the drug in the treatment of most forms of tuberculosis.

This investigation was conducted under the direction of the National Research Council Committee on Chemotherapeutics and Other Agents, by Drs. Robert F. Farrington, Harriet Hull-Smith, Paul A. Bunn and Walsh McDermott.

Writing in the June 21 issue of *The Journal of the American Medical Association*, the investigators point to four general types of toxic reactions to the drug among 16 tuberculosis patients: histamine or allergic reaction in which poison is released by the tissues, characterized by flushing, headache and an abrupt fall in blood pressure; various forms of anaphylaxis or hypersensitivity to the drug; neurologic disturbance with occasional deafness, and kidney damage.

However, in only two of the 16 patients, treated for 120 days, was it necessary to interrupt the administration of the drug, and it was possible to resume treatment eventually in both of these patients.

"On the basis of the present investigation," write the physicians, "it appears that the toxicity of highly purified streptomycin is sufficiently low to justify its long-continued administration to patients with actively progressing tuberculosis and other comparably serious infections. Conversely, it appears that streptomycin should not be employed in the treatment of relatively benign [mild] infections, such as recently developed minimal tuberculosis or chronic brucellosis [undulant fever], until the question of possible late effects resulting from the use of the drug can be determined."

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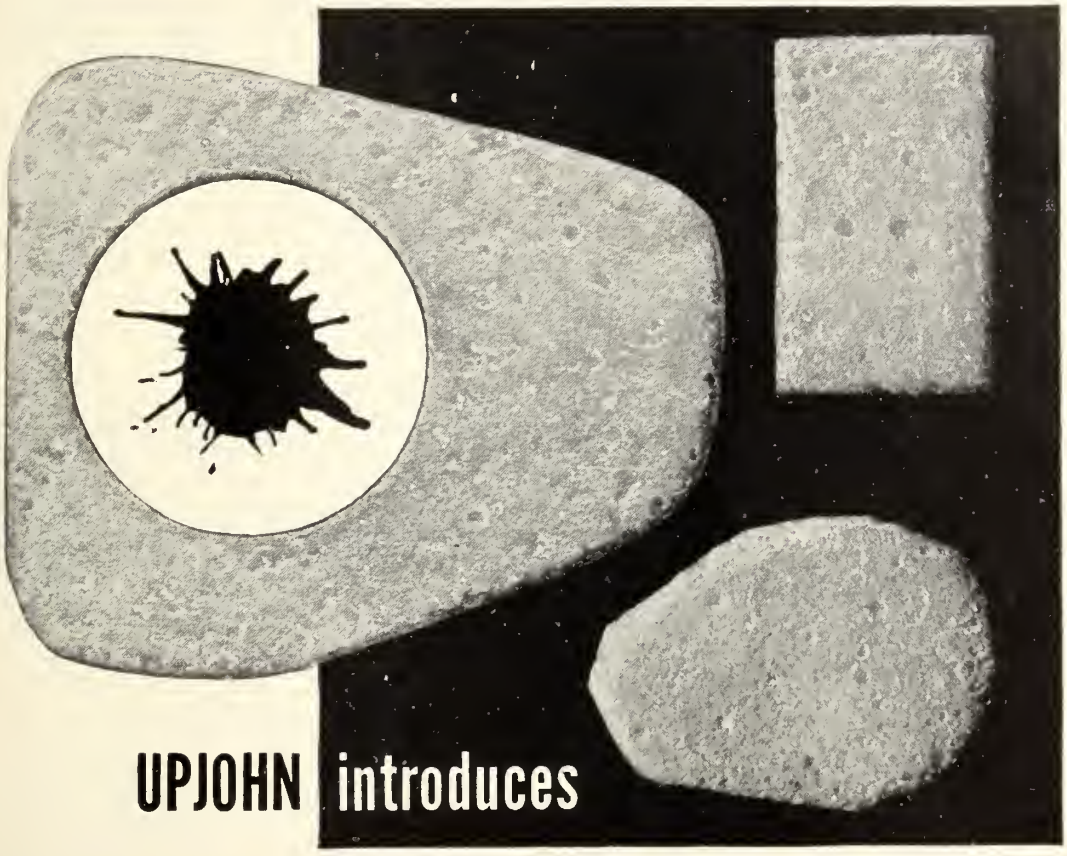
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VENOUS THROMBOSIS, CLOTTING OF BLOOD IN VEINS, INCREASING

Two Baltimore physicians point out that venous thrombosis, a condition in which the blood clots in the veins, is on the increase because more operations are performed today.

Writing in the April 26 issue of *The Journal of the American Medical Association*, the physicians—Thomas B. Aycock and James W. Hendrick, from the Department of Surgery, University of Maryland School of Medicine and College of Physicians and Surgeons—suggest treatment for the two types of venous thrombosis, phlebothrombosis and thrombophlebitis.

The blood clot in phlebothrombosis is the result of tissue injury and can become detached easily from the vein wall. These patients, although apparently not ill, are potential fatalities because of the danger that the clot will become detached and be carried by the blood stream to the lungs where it may act as a plug and cause death. Early detection of this condition is possible if the patient is examined for tenderness of the legs following any tissue damage such as an operation.

Cutting of the affected vein, which runs under the skin in the thigh, above the thrombus will prevent this clot from reaching the heart, suggest the physicians.

On the other hand, the blood clot in thrombophebitis is the result of inflammatory changes and is firmly attached to the vein wall. This condition usually can be diagnosed easily from symptoms such as fever, pain and swelling. The patient's

(Continued on Page 46)

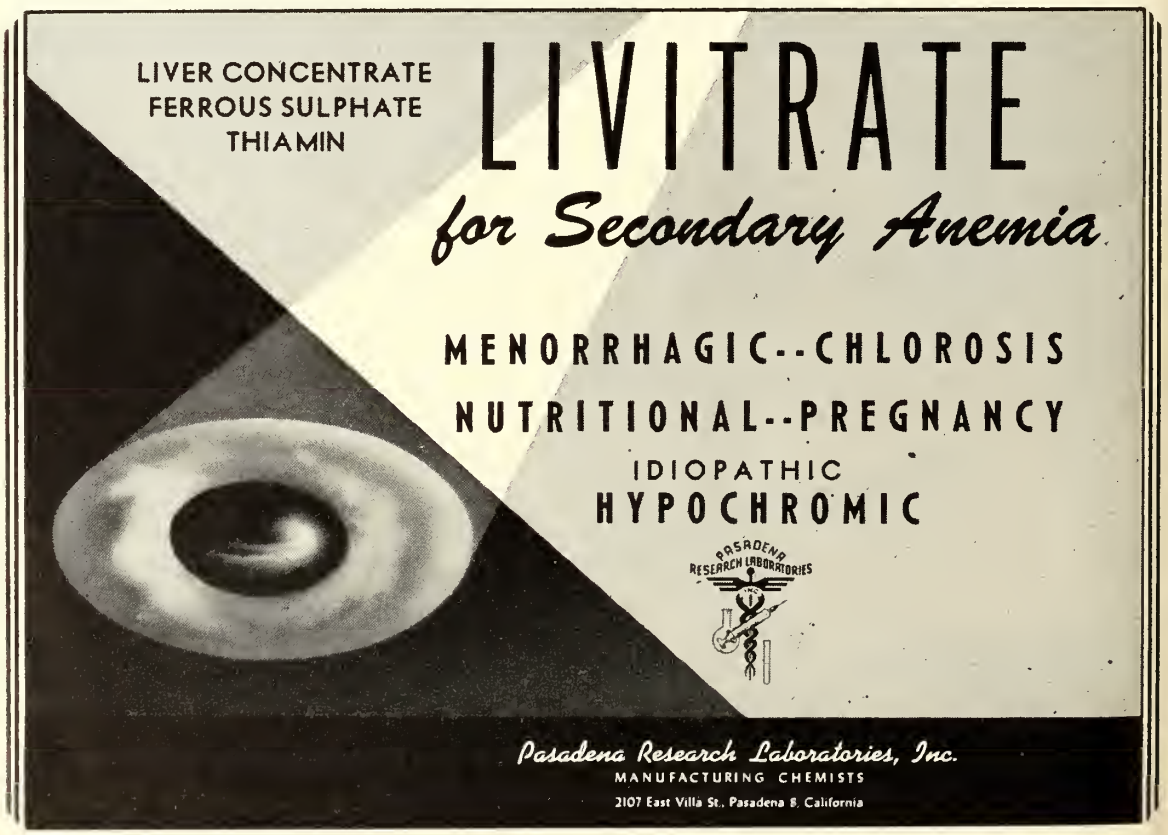


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*"Allergy in Practice," Feinberg, S. M., Second Edition: 1946, Year Book Publishers, Chicago



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Once a doctor has found what causes the allergic reaction—by means of the history of the case supplemented by skin tests—he will prescribe treatment according to the nature of the patient's sensitivities.

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If the allergen is house dust or pollen, or something else that cannot be easily avoided, a series of inoculations may be suggested.

Some people, however, do not respond to this type of treatment, or are sensitive to too many different things to make inoculations a practical procedure. New chemical drugs—developed to control allergic reactions in certain types of allergy—are showing promise. They are to be used, of course, only under the direction of a physician.

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VENOUS THROMBOSIS, CLOTTING OF BLOOD IN VEINS, INCREASING

(Continued from Page 42)

chances of recovery are good, but, if he does not receive effective treatment, complications such as swelling, pain, ulceration of the legs and infection may develop.

Treatment of this condition, which the physicians say will effect a cure, consists of injecting a local anesthetic such as procaine hydrochloride or Bromsalizol into the sympathetic ganglions, nerve centers which run alongside the spinal cord. In addition, the leg is elevated until the swelling disappears, which usually requires from three to 10 days.

Drs. Aycock and Hendrick point out some of the factors which contribute to the development of venous thrombosis. Citing other investigators, the authors state that a greater incidence of the disease was found during the winter months, especially when grippal infections were most prevalent. Also, more cases have been reported in Northern states than in Southern states, which may be attributed to the greater incidence of the infections of the upper part of the respiratory tract in the northern section of the country. In addition, venous thrombosis has been found to occur more often in the older age group of patients and in patients who have cancer, heart disease and serious infections.

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PATIENT ADMITTED TO HOSPITAL EVERY TWO SECONDS LAST YEAR

During 1946 one patient was admitted to a hospital in the continental United States every two seconds and a live baby was born in a hospital approximately every 15 seconds, according to the 26th annual report of the Council on Medical Education and Hospitals of the American Medical Association.

F. H. Arestad, M.D., and M. G. Westmoreland, M.D., present the council report in the April 12 issue of *The Journal of the American Medical Association*. Their figures reveal that in comparison with 1945 the number of hospital beds has decreased from 1,738,944 to 1,468,714, the number of admissions from 16,257,402 to 15,153,452 and the number of patient days from 512,915,155 to 452,400,710. However, a total of 2,136,373 births were reported for 1946 as compared with 1,969,667 in 1945. This is the first year that hospital births in the United States have reached the two million mark.

Represented in the report are 6,280 hospitals registered by the American Medical Association, including 1,165 hospitals approved for internships and residencies and 2,640 accredited by the American College of Surgeons as meeting unconditionally its minimum requirements for general standardization. The number of hospitals totals 231 less than reported in 1945.

According to the present survey the governmental hospitals have 1,082,734, or 73.7 per cent of all beds, the nongovernmental group 385,980, or 26.3 per cent. In 1945 the corresponding percentages were 78 and 22.

There were 15,153,452 admissions exclusive of out-patients and newborn infants in 1946. For comparison it may be noted that in the period 1933 to 1945 the hospital admissions increased from 7,037,982 to 16,257,402. The greatest annual gain, a total of 2,829,088, occurred in 1943, with subsequent increases of 662,150 in 1944 and 220,554 in 1945. This trend was sharply reversed in 1946, however, when the number of admissions decreased by 1,103,950.

The governmental hospitals with 73.7 per cent of the bed capacity reported 4,598,163 admissions or 33 per cent of all patients admitted in 1946. The nongovernmental hospitals with 26.3 per cent of the beds had 10,555,289 admissions, or 67 per cent. The corresponding ratios in 1945 were 39 and 61 per cent.

The general hospitals continue to offer a tremendous volume of hospital service, as evidenced by the report of 14,051,508 admissions in 1946, or 92.7 per cent of all patients admitted.

The mental hospitals, with a total of 674,930 beds, had 271,209 admissions, or 1.7 per cent of all patients admitted in 1946. In comparison with last year there was an increase of 22,333 admissions, with gains reported in all governmental and nongovernmental classifications.

An increase in tuberculosis hospitalizations is shown in the present survey, which reports a total of 99,741 admissions in the tuberculosis sanatoriums as compared with 86,186 in 1945.

The enormous volume of service rendered by hospitals in the United States is likewise reflected in the daily patient load, which averaged 1,239,454 in 1946 exclusive of newborn infants. This represents a total of 452,400,710 treatment days. Compared with 1945, the daily census shows a net decrease of 165,793.

The percentage of beds occupied in 1946 showed increased occupancy rates in all governmental classifications except the hospitals operating under state control. The increase was especially noticeable in the federal division, where the percentage of occupancy has advanced from 55.1 in 1944 and 71.7 in 1945 to 80.6 in the present report. This change not only is indicative of the longer periods of hospitalization

(Continued on Page 52)

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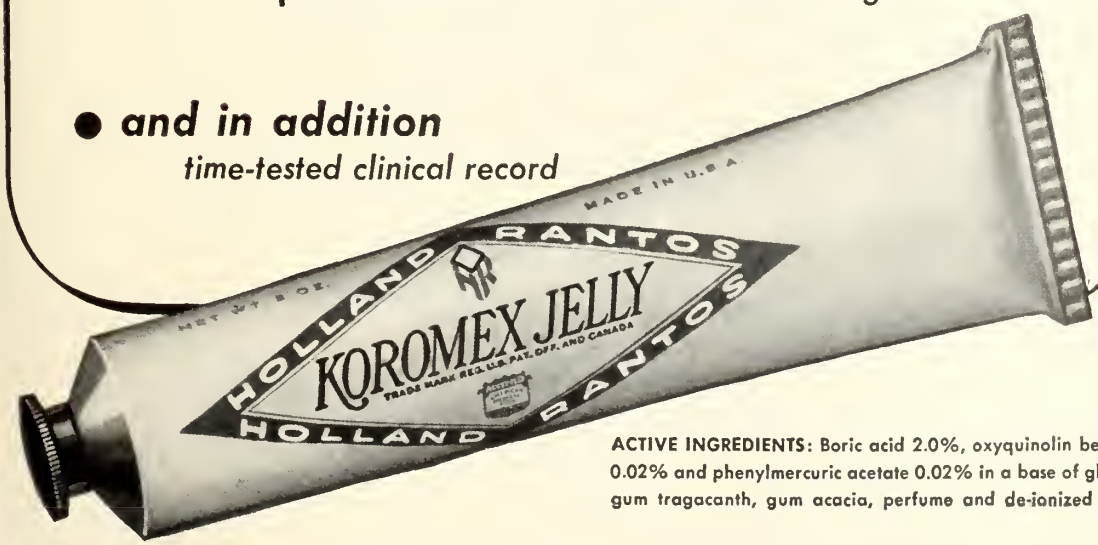
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PATIENT ADMITTED TO HOSPITAL EVERY TWO SECONDS LAST YEAR

(Continued from Page 48)

required in the care of the wounded but also is due to the reduction within the last year of a considerable number of hospital beds no longer required for military use.

Registered hospitals reported employing 146,602 graduate nurses exclusive of 28,245 private duty nurses during 1946. The corresponding figures for 1945 were 144,724 and 25,277.

In connection with the present survey, state accredited schools of nursing reported a student enrollment of 112,885 as compared with 130,909 in 1945. This reduction in student personnel is indicative of the difficult nursing problem now facing the hospital field and the country at large. *The Journal of the American Medical Association*, January 11, 1947, stated editorially that admissions to schools of nursing in 1946 were lower than at any other time in the past ten years. Only 30,899 student nurses were admitted in 1946, as compared with 56,567 in 1945.

TENNESSEE LICENSED HORDES OF NATUROPATHS UNDER '43, '45 LAWS

In 1943 and 1945 the general assembly of Tennessee legalized the licensing of naturopaths, practitioners who employ a drugless system of treatment by the use of physical forces, such as air, light, water, heat and massage.

An editorial in the May 31 issue of *The Journal of the American Medical Association* states that the "Tennessee incident is reminiscent of the diploma and license scandals of a previous generation. . . . Who knows how long Tennessee and the rest of the United States will be paying for the folly of the general assemblies of 1943 and 1945?"

The Journal editorial states in part:

"A naturopathic board was established to deal with such licensure. Now by an act of the last general assembly in Tennessee the naturopathic board has become extinct. Within a week after the law was first passed a member of

(Continued on Page 54)

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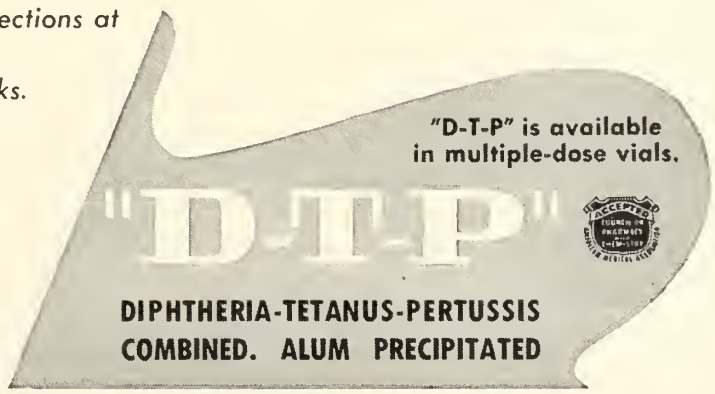


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TENNESSEE LICENSED HORDES OF NATUROPATHS UNDER '43, '45 LAWS

(Continued from Page 52)

the naturopathic board sent a letter to naturopathic healers through the nation telling them that Tennessee had now become the happy hunting ground for their profession. The publication of the Tennessee Department of Public Health states that a horde of naturopathic healers met at the Maxwell House in Nashville four months later and hundreds of licenses were issued like tickets to a banquet. A reporter for the Commercial Appeal estimated that about 1,500 Tennessee licenses to practice naturopathy were doled out to those able to purchase them; evidence was developed indicating the establishment of a political organization for the maintenance of this unfortunate system of practice. Among other naturopaths who migrated to Tennessee was William E. Estep, who has a long list of bogus performances and fake licenses to his credit. The Memphis newspaper gives an amazing account of a visit by one of its reporters, Harry Woodbury, to Estep's clinic. When the reporter entered he was greeted by a man sitting behind a plain desk who said to him 'You look like you are in quite a bit of pain. What seems to be troubling you, sir?' The reporter submitted to an examination by Estep during which the naturopath said to him 'You are eaten up with sinus!' He was also told by Estep that he had stomach ulcers and that his blood pressure was dangerously high. A previous examination had shown that the reporter was not actually subject to any of these maladies. The naturopaths gave Mr. Woodbury an electrical treatment and three prescriptions, one of which called for four ounces of sulfocyanate. Estep was indicted for practicing medicine without a license and sentenced to a fine of $500 and imprisonment in the county

(Continued on Page 56)

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Feinberg. S. M.: Allergy in Practice, Chicago, The Year Book Publishers, Inc., 1944, p. 502.



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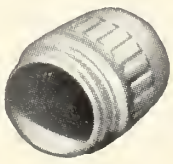
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TENNESSEE LICENSED HORDES OF NATUROPATHS UNDER '43, '45 LAWS

(Continued from Page 54)

workhouse for 11 months and 29 days. The Tennessee incident is reminiscent of the diploma and license scandals of a previous generation. It calls to mind the shipping of carloads of physicians with well nigh worthless diplomas from schools in St. Louis and Kansas City to Connecticut and Arkansas, where conveniently eclectic boards licensed them. That was the scandal that gave the United States such notorious charlatans as Brinkley and Schireson."

ONLY TREATMENT FOR GALLSTONES IS SURGICAL REMOVAL, DOCTOR SAYS

The only proper treatment for gallstones is their surgical removal, with the gallbladder if possible, in order that this non-essential organ may not again become a "stone factory" and place the patient's life in jeopardy, according to Lester R. Whitaker, M.D., of Portsmouth, N. H.

Writing in the current issue of *Hygeia*, health magazine of the American Medical Association, Dr. Whitaker says that gallstones are a menace to the individual who carries them because they may block the bile passages.

"If the block is in the outlet of the gallbladder it becomes distended and acutely inflamed, and may rupture; if the block is in the main duct leading from the liver into the intestine, jaundice results, and eventually the bile ducts and the liver become infected," states the author. "It is believed that even cancer of the gallbladder may develop from the irritation of the stones."

A gallstone may "jam" in the duct because the gallbladder contracts after a person eats in order to push out the bile

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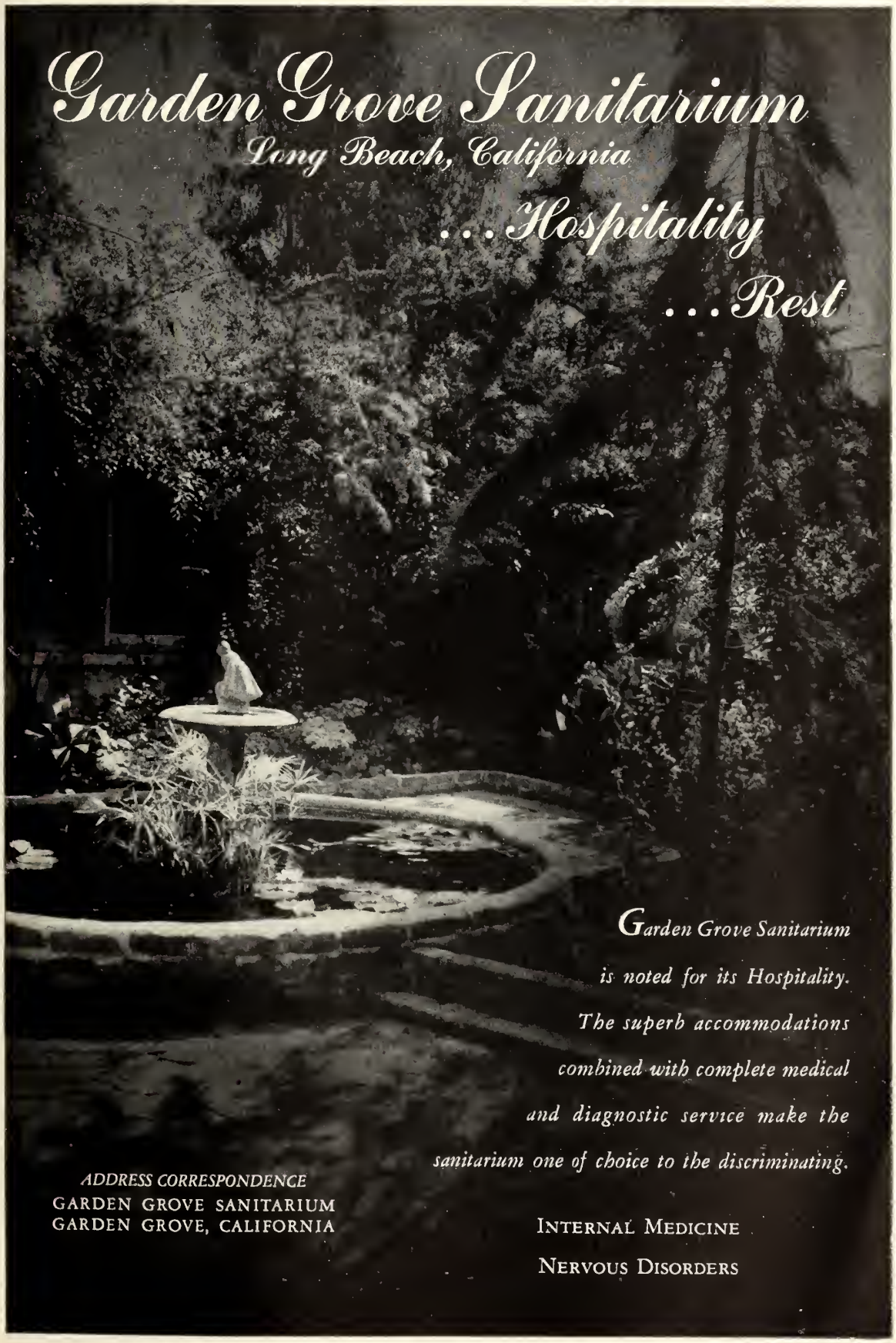
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(Continued from Page 56)

during digestion and the stone is too large to go through. When a gallstone becomes "jammed" trouble really begins. Since the gallbladder cannot be emptied of its bile and secretions, it is distended, and produces symptoms ranging from "indigestion and gas discomfort" to intolerable pain called "gallstone colic," in which the patient feels that his midriff is going to burst open or be crushed in. After a few attacks of "gallstone colic" the patient generally agrees to have a surgical operation for removal of the stones.

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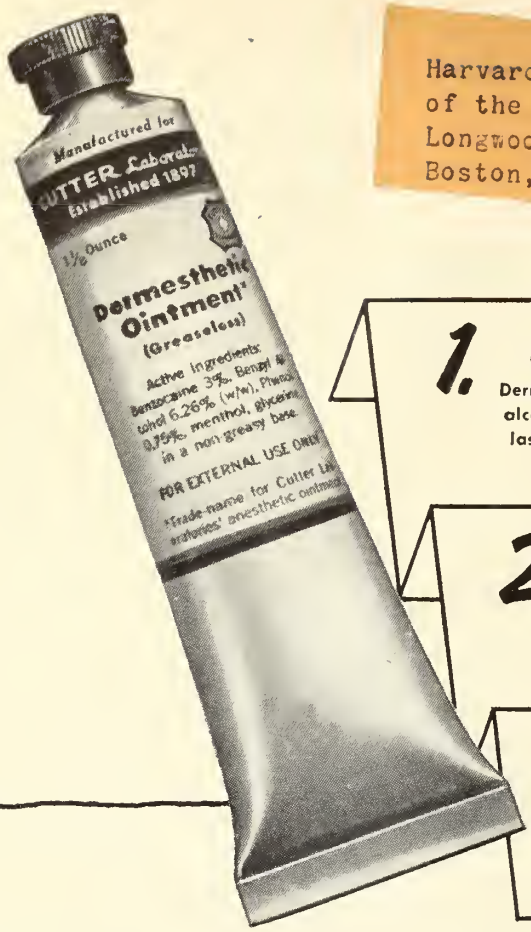
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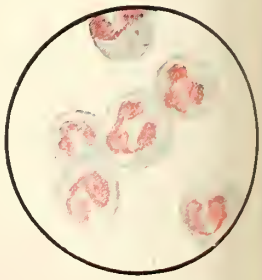
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Carl L. Mulfinger....Chairman, Committee on Organization, Membership
H. Gordon MacLean.....Chairman, Committee on Medical Economics
Dwight H. Murray....Chairman, Committee on Public Policy, Legislation
John C. Ruddock.....Chairman, Committee on Postgraduate Activities
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Communications for the Public Relations Department should be addressed to the Director, Mr. John Hunton, Room 2009, 450 Sutter Street, San Francisco 8.

Cancer Commission

Henry J. Ullman	Santa Barbara	1948
David A. Wood (Sec'y, No. California)	San Francisco	1948
James F. Rinehart	San Francisco	1948
Lyell C. Kinney (Chairman)	San Diego	1949
L. Henry Garland	San Francisco	1949
Orville N. Meland, (Sec'y, So. California)	Los Angeles	1949
Homer Woolsey (Vice-Chairman)	Woodland	1950
Eric Larson	Los Angeles	1950
Harry E. Peters, Jr.	Oakland	1950

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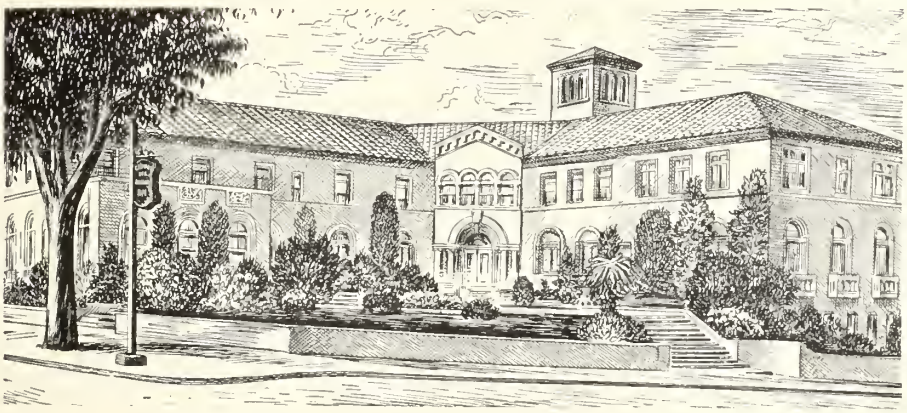
ROSTER OF COUNTY MEDICAL SOCIETIES, CALIFORNIA MEDICAL ASSOCIATION

(County society secretaries are requested to notify CALIFORNIA MEDICINE promptly when changes are indicated in their roster information.)

SOCIETY	PRESIDENT	SECRETARY	MEETING
ALAMEDA County Medical Association..... 364 14th St., Oakland 12.	Theodore C. Lawson, 3135 Webster St., Oakland 9.	Dorothy M. Allen, 2923 Webster St., Oakland 9.	Third Monday, 8:15 p.m., Hunter Hall, Oakland.
BUTTE-GLENN County Medical Society.....	J. G. Hepplewhite, Chico.	J. O. Chiapella, 131 Broadway, Chico.	Second Thursday.
CONTRA COSTA County Medical Society..	H. W. McNerney, 2600 MacDonald Ave., Richmond.	George D. Husser, 322 Twenty-third St., Richmond.	Second Tuesday, 8:00 p.m.
FRESNO County Medical Society.....	E. A. Patterson, P. O. Box 1908, Fresno.	William N. Knudsen, 701 T. W. Patterson Bldg., Fresno.	First Tuesday, University-Sequoia Club, Fresno.
HUMBOLDT County Medical Society	Walter Dolfini, 539 G St., Eureka.	Wayne P. McKee, Ferndale.	First Thursday.
IMPERIAL County Medical Society.....	Charles Cutshaw, Brawley.	George Cole, Brawley.	Third Tues., 7 p.m., Barbara Worth Hotel, El Centro.
INYO-MONO County Medical Society.....	Walter L. Wilson, 108 N. Main, Bishop.	Lloyd S. Bambauer, Bishop.	Fourth Wednesday, except December, January, February.
KERN County Medical Society.....	William H. Macdonald, 2103 18th St., Bakersfield.	Frederick O. Wynia, 354 Haberfelde Bldg., Bakersfield.	3rd Tues., 7:30 p.m., Stockdale Country Club ex. Jun. Jul. Aug.
KINGS County Medical Society.....	Allen Stamler, Corcoran.	William F. Chamlee, Van Sicklen Bldg., Hanford.	Second Monday, 8:00 p.m., Legion Hall, Hanford.
LASSEN-PLUMAS-MODOC Co. Med. Soc....	Wilbur C. Batson, Greenville.	John Paul McKenney, Alturas.	On Call.
LOS ANGELES County Medical Assn..... 1925 Wilshire Blvd., Los Angeles 5.	E. T. Remmen, 429 North Orange, Glendale 3.	Carl L. Mulfinger, 1052 West Sixth St., Los Angeles 14.	1st and 3rd Thursday, 1925 Wilshire Blvd., Los Angeles
MARIN County Medical Society.....	Ernest W. Denicke, 1010 B St., San Rafael.	Carl W. Clark, 1010 B St., San Rafael.	Fourth Thursday, 7:00 p.m., Travelers Inn, San Rafael.
MENDOCINO-LAKE Co. Medical Society....	Clemens M. Beil, Upper Lake.	E. C. Bennett, Ukiah.	
MERCED County Medical Society.....	E. R. Fountain, Merced.	James A. Parker, Bank of America Bldg., Merced.	Third Thursday, Hotel Tioga, Merced.
MONTEREY County Medical Society.....	A. L. Wessels, 11 Maple St., Salinas.	F. H. Smith, Salinas National Bank Bldg., Salinas.	First Thursday.
NAPA County Medical Society.....	Charles H. Bulson, 1203 Seminary St., Napa.	M. M. Booth, Bruck Bldg., St. Helena.	First Wednesday.
ORANGE County Medical Association.....	John Montanus, Rt. 1, Box 587A, Santa Ana.	Llewellyn E. Wilson, 502 Bank of America Bldg., Anaheim.	First Tuesday, 7:00 p.m., Windsor Cafe, Santa Ana.
PLACER-NEVADA-SIERRA Co. Med. Soc....	Paul Barnes, Loomis.	Vernon W. Padgett, Grass Valley.	At Call of President.
RIVERSIDE County Medical Association.....	Franklyn D. Hankins, 3014 Pine St., Riverside.	Cecil Lord, 3616 Main St., Riverside.	2nd Mon., 8:00 p.m., Library, Riverside Community Hosp.
SACRAMENTO Soc. for Med. Improvement.	Dudley Saeltzer, Medico-Dental Bldg., Sacramento.	Edmund E. Simpson, 1127 11th St., Sacramento 14.	Third Tuesday, 8:30 p.m., Auditorium, Sacramento.
SAN BENITO County Medical Society.....	J. M. O'Donnell, Hollister.	J. J. Haruff, Hollister.	At Call of President.
SAN BERNARDINO Co. Medical Society.....	Marcus D. White, 201 Fallas Bldg., Ontario.	Thomas F. Dempsey, 1272 E. St., San Bernardino.	1st Tues., 8:00 p.m., San Bernardino Co. Charity Hosp.
SAN DIEGO County Medical Society..... 1410 Medico-Dental Bldg., San Diego 1.	F. E. Jacobs, 4228 El Cajon Blvd., San Diego 5.	W. H. Geistweit, Jr., 810 Med. Bldg., 233 A St., San Diego 1.	Second Tuesday, San Diego Club.
SAN FRANCISCO County Medical Society... 2180 Washington St., San Francisco 9.	Anthony B. Diepenbrock, 2180 Washington St., San Francisco 9.	Robertson Ward, 2180 Washington St., San Francisco 9.	2nd Tues., 8:15 p.m., 2180 Washington St., S. F. 9.
SAN JOAQUIN County Medical Society.....	Dora Ames Lee, 110 North San Joaquin St., Stockton 6.	H. D. Chope, Box 111, Stockton.	1st Thurs., 8:15 p.m., Medico-Dental Club Rms., Stockton.
SAN LUIS OBISPO County Medical Society..	H. N. Cookson, 154 Traffic Way, Arroyo Grande.	G. D. Kelker, Cayucos.	3rd Sat., 7:00 p.m., Golden Dragon Cafe, San Luis Obispo
SAN MATEO County Medical Society.....	Stuart Lindsay, 440 Portola, San Mateo.	Albert G. Miller, Medical Arts Bldg., San Mateo.	Third Tuesday of each month.
SANTA BARBARA County Medical Society..	D. H. McNamara, Cottage Hospital, Santa Barbara.	Douglas F. McDowell, 317 W. Pueblo St., Santa Barbara.	Second Monday, Cottage Hospital.
SANTA CLARA County Medical Society..... 1101 Medico-Dental Bldg., San Jose 20.	Joseph B. Josephson, 1541 The Alameda, San Jose 11.	Leslie B. Magoon, 630 E. Santa Clara, San Jose 12.	
SANTA CRUZ County Medical Society.....	Luther Newhall, Jr., Ocean and Broadway, Santa Cruz.	Samuel B. Randall, 230 Walnut Ave., Santa Cruz.	Every 2nd month, 2nd Tues. Time, place to be announced.
SHASTA-TRINITY County Medical Society.	L. C. Mosher, Bieber.	Julius M. Kehoe, Redding.	Second Monday.
SISKIYOU County Medical Society.....	Richard W. Jones, 106 South Broadway, Yreka.	F. W. Martin, Mt. Shasta.	Sunday on Call.
SOLANO County Medical Society.....	H. Randall Madeley, 727 Sonoma St., Vallejo.	Charles H. Widenmann, 405 Georgia St., Vallejo.	2nd Thurs., 8:00 p.m., Casa de Vallejo, Hotel Vallejo.
SONOMA County Medical Society.....	Wilson Stegeman, 534 B St., Santa Rosa.	Raimond F. Clary, 1616 Fourth St., Santa Rosa.	Second Thursday.
STANISLAUS County Medical Society.....	Andrew Van De Pol, P. O. Box 944, Modesto.	J. Lyle Spellman, 138 McHenry Ave., Modesto.	Second Friday, 7:30 p.m., Hotel Hughson.
TEHAMA County Medical Society..... ...	James L. Faulkner, Red Bluff.	Arthur H. Meusser, Corning.	At Call of President.
TULARE County Medical Society.....	Frank R. Guido, Box 1094, Visalia.	Debora Pineles, Box 349, Visalia.	
VENTURA County Medical Society.....	D. M. Clark, Foster Memorial Hospital, Ventura.	A. A. Morrison, 34 North Ash, Ventura.	
YOLO County Medical Society.....	Max Waters, Porter Bldg., Woodland.	Emery Leivers, Woodland Clinic, Woodland.	First Wednesday.
YUBA-SUTTER-COLUSA Co. Medical Soc....	John W. Scott, Colusa.	Leon M. Swift, Box 244, Marysville.	Second Wednesday.

(For roster of C.M.A. committees and other organizations, see last month's issue)

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PHYS. M.D. (Female) one-half time work in Los Angeles County Juvenile Hall. California Registration required. Information obtainable from Los Angeles County Civil Service Commission, 102 Hall of Records, Los Angeles 12, Telephone MU 9211, ST 2912.

PSYCHIATRIST for work in Los Angeles County Juvenile Hall. California Registration required—no experience. Information obtainable from Los Angeles County Civil Service Commission, 102 Hall of Records, Los Angeles 12, or telephone MU 9211, ST 2912.

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YOUNG PEDIATRICIAN, recently completed required hospital training which had been interrupted by military service; has had some research and teaching experience; available immediately; licensed California; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

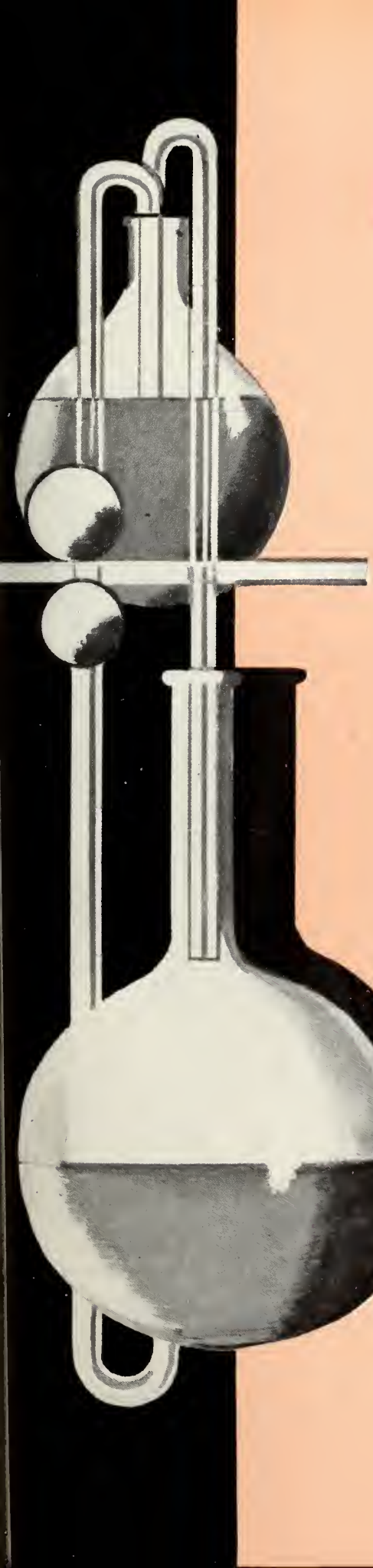
YOUNG PHYSICIAN wishes assistantship to internist preferably diplomate of American Board; B.S., B.M., and M.D. degrees; state university; year's rotating internship in medicine; four years with navy; expects early discharge; licensed in California and Minnesota; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

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FOR SALE OR RENT—New modern medical building; complete laboratory set-up; approximately 1,000 feet space, also parking lot; Santa Monica district. Interested parties contact Box No. 12,030, California Medicine.

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(Continued on Page 10)



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1. Bickers, W.: Am. J. Obst. & Gynec. 51:100, 1946.

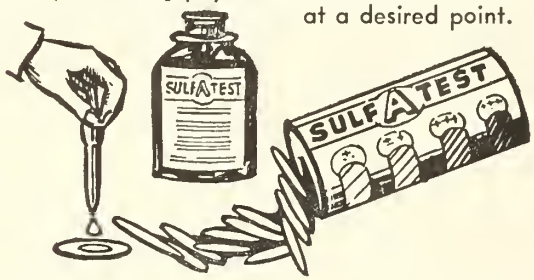
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The physicians point out "that either husband or wife may be the sole cause or both may have minor defects the combination of which is sufficient to prevent conception. Consequently, one must not be satisfied with the finding of defects in one partner, but both husband and wife should be completely examined before an opinion is expressed as to the factors causing the infertility and the possibility of altering them."

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(Continued from Page 8)

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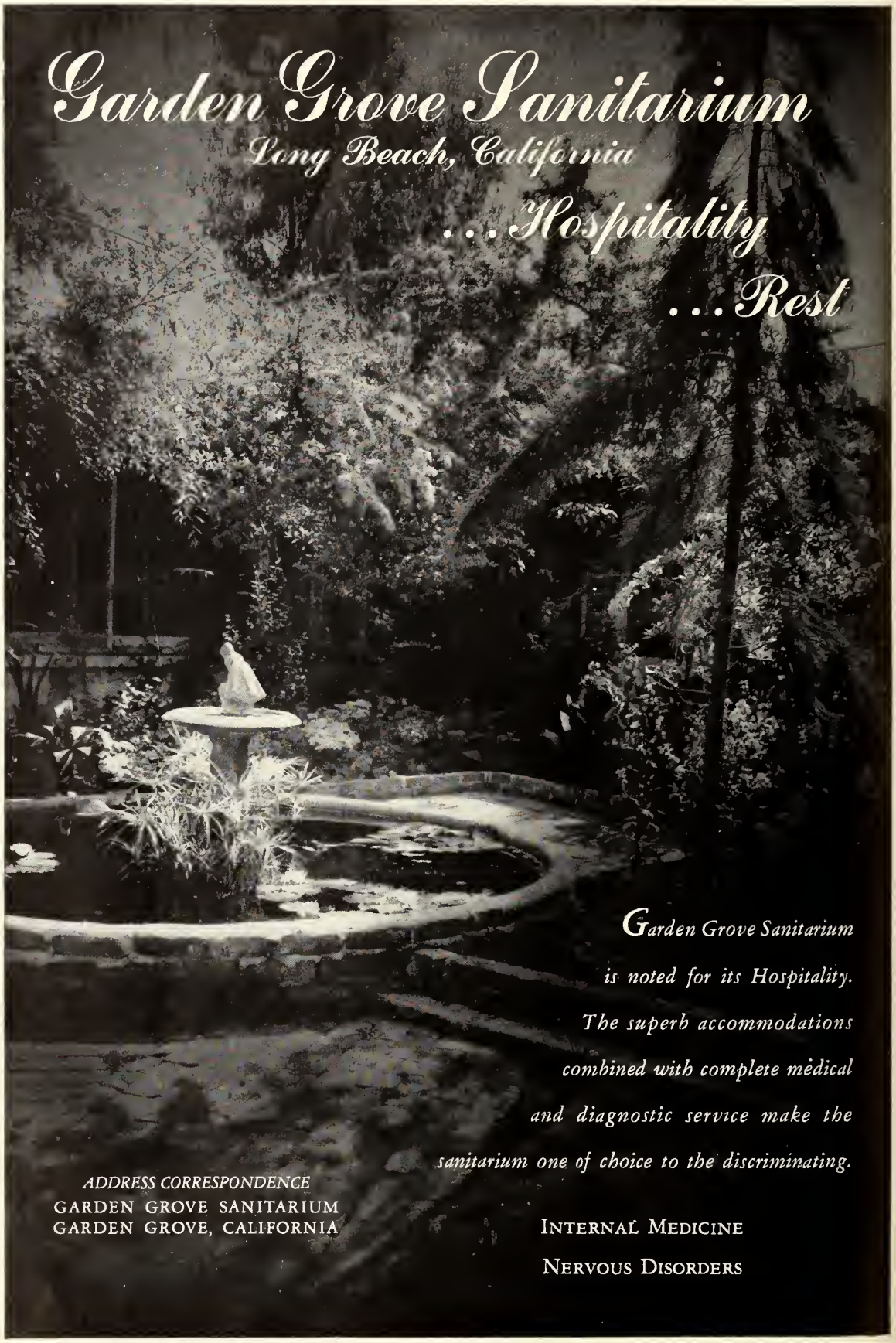
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*J. A. M. A. 129:1030. December 15, 1945.

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REPORT TREND TOWARD RURAL PRACTICE BY RETURNED DOCTORS

The Bureau of Information of the American Medical Association, which provides the medical officer with information regarding areas needing physicians, "is sensing the trend of returned medical officers to move away from their recent venture in city practice to accept the opportunities of more active practice in smaller communities," according to Virginia Shuler, Director.

Writing in *The Journal of the American Medical Association*, (May 17) the author points out:

"Demobilization is not completely over. Many young physicians are still in the armed forces, and a large proportion of the resident physicians doing postgraduate work in hospitals are men who served in World War II. According to the Directory Department of the American Medical Association, approximately five thousand physicians have not yet decided on a permanent location.

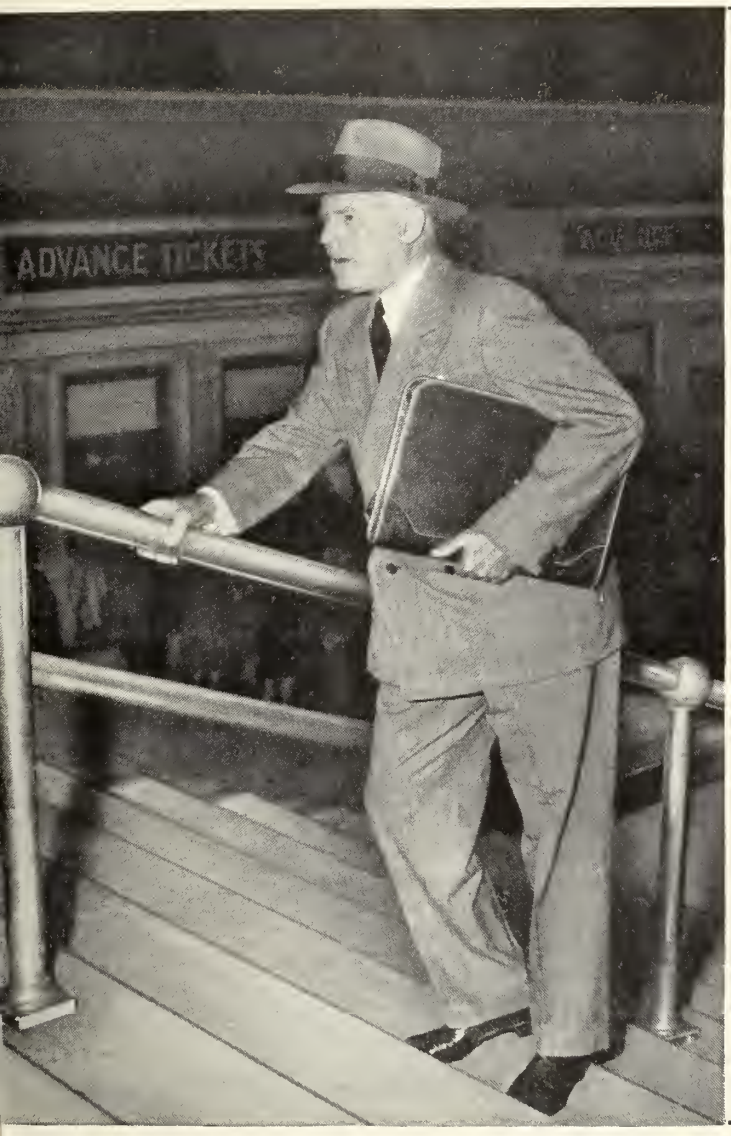
"Already the Bureau of Information is sensing the trend of returned medical officers to move away from their recent venture in city practice to accept the opportunities of more active practice in smaller communities. From studies of physician distribution the general picture for location of physicians during the year following V-J day shows an adequate supply of physicians in most of the states but reflects a need for a more coordinated system of medical service in many of the rural areas.

"Leaders of the medical profession interested in better rural medical service are working with the farm organizations to outline a program of activity to develop in rural areas an appreciation of modern medical service and the responsibility of the community in planning a health program that will make the country physician a working partner toward decentralization of medical care from urban to large trade centers to the more rural sections of the population. The medical profession and the farm groups want to make rural medical service more adequate not only to the farmer but also to those who extend this service to the farmer.

"Dr. F. S. Crockett, chairman of the Committee on Rural Medical Service of the American Medical Association, has recently announced that the Farm Bureau, the Farmers Union, the Cooperative Milk Producers' Federation and the Grange have each appointed two of their members to act in an advisory capacity to the Committee on Rural Medical Service of the American Medical Association. This committee will hold a meeting soon to outline and develop an active program for regional and local rural representatives. Thomas A. Hendricks, secretary of the Council on Medical Service, is working out a plan with the Committee on Rural Medical Service to coordinate the council's and the committee's regional meeting in order to develop through workshop conferences the most adequate extension of medical service to all areas.

"In December 1946 the Bureau of Information began a survey through the local medical societies to determine the conditions and distribution of medical care in the rural areas of the country. Through the cooperation of the secretaries of the state and county medical societies, listings of areas which have requested physicians are available to help the doctor in selecting an area in which to establish his medical practice."

Accompanying *The Journal* article are reproductions of several state maps showing the trend in locations of physicians from April 1946 to January 1947—the peak period of demobilization of doctors from the armed services. The article also carries comments by several state medical secretaries of conditions and distribution of physicians as related in medical care in their counties.



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CANCER OF FACE, MOUTH, NECK TREATED WITH X-RAYS, RADIUM

Two Dallas, Texas, doctors describe treatment with x-rays and radium of patients with cancer of the face, mouth and neck, in the July 5 issue of *The Journal of the American Medical Association.*

The physicians—Charles L. Martin, Professor of Clinical Radiology at Southwestern Medical College, Southwestern Medical Foundation, and Carleton Wright, radiologist—state that "cancer of the exposed surfaces of the skin and cancer of the mouth are of unusual interest to physicians in the Southern states because of their high incidence in this area."

Other investigators have observed that the increase in the number of mouth lesions over that found in other regions was confined almost entirely to women. Drs. Martin and Wright believe that the explanation for this is the prevalent habit of snuff-dipping among the women of the poorer classes in the South. "About 90 per cent of the women admitted to our clinic with cancer of the lining of the cheek and palate have dipped snuff for long periods of time," they state.

The authors point out that a United States Public Health survey made for the Dallas-Fort Worth area in Texas in 1939 shows that 33.8 per cent of 3,683 cancers found among farmers and ranchers in the Southwestern states were skin lesions. The next highest figure was 30.3 per cent recorded in Birmingham, Ala. Most skin specialists believe that this high incidence results from constant exposure to sunshine and hot winds, which produce many precancerous lesions in the blond type of skin found so predominantly in the white population of the Southwestern states. Cancerous lesions of the skin are so common in Texas that the average

(Continued on Page 17)

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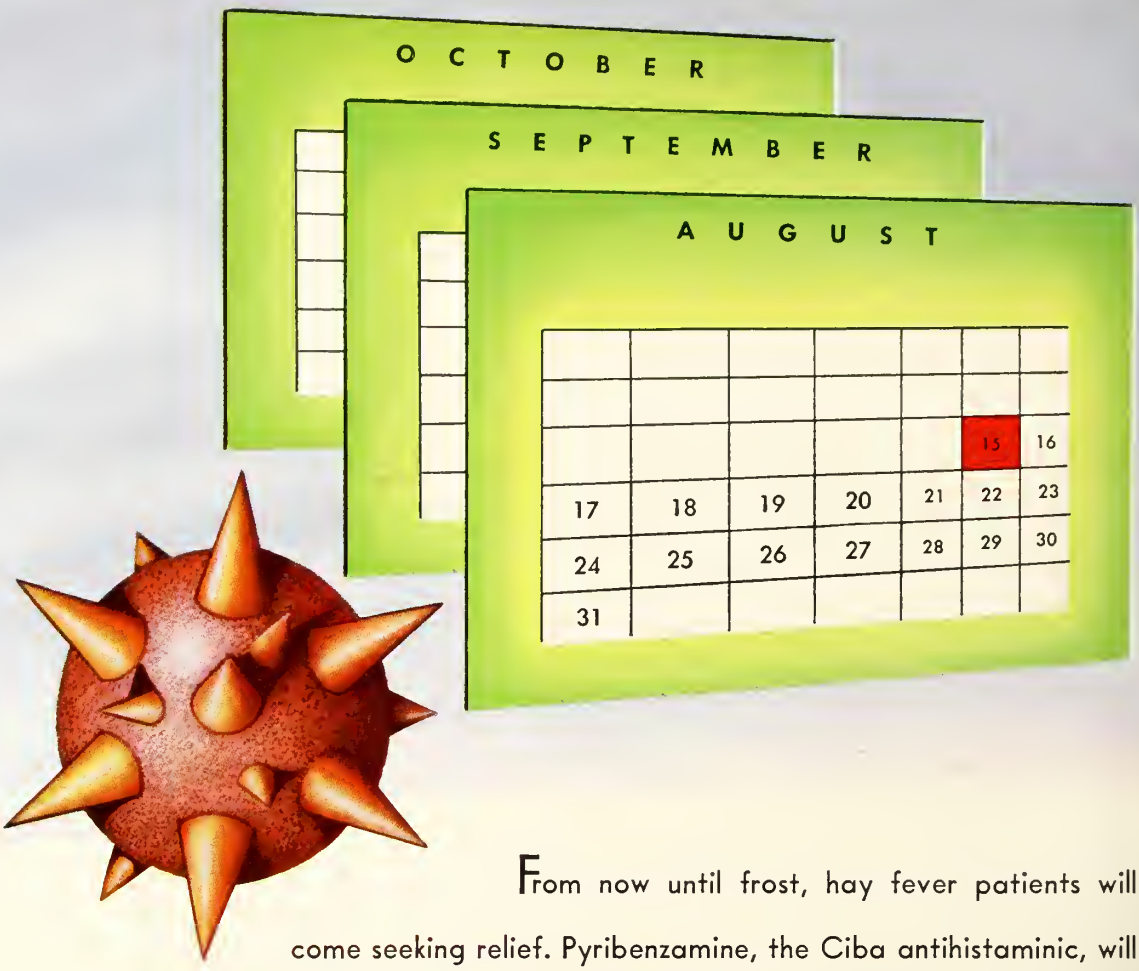
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CANCER OF FACE, MOUTH, NECK TREATED WITH X-RAYS, RADIUM

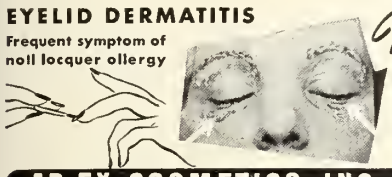
(Continued from Page 16)

outdoor worker is prone to disregard them until they become large enough to cause pain or inconvenience.

The technic of treatment as described by the Dallas physicians is to remove the elevated tumor with an electric current and then to apply x-rays or radium to the area. Thus, the authors claim, extremely large doses of rays are not necessary. Each treatment requires only a few minutes for its administration, and the patient loses little time from his occupation. However, a rather severe reaction appears about seven days after the treatment is completed, and the treated area is often denuded of skin. All evidence of the tumor disappears during this period, and healing occurs in six to eight weeks. "The resultant scarring is slight," according to the physicians, "and the cosmetic results, particularly on the lip, are excellent."

The authors caution that "the radiologist charged with the care of a cancer patient should make an all-out effort to produce a cure with his first series of treatments because the second attempt is never very effective and may actually produce harmful results."

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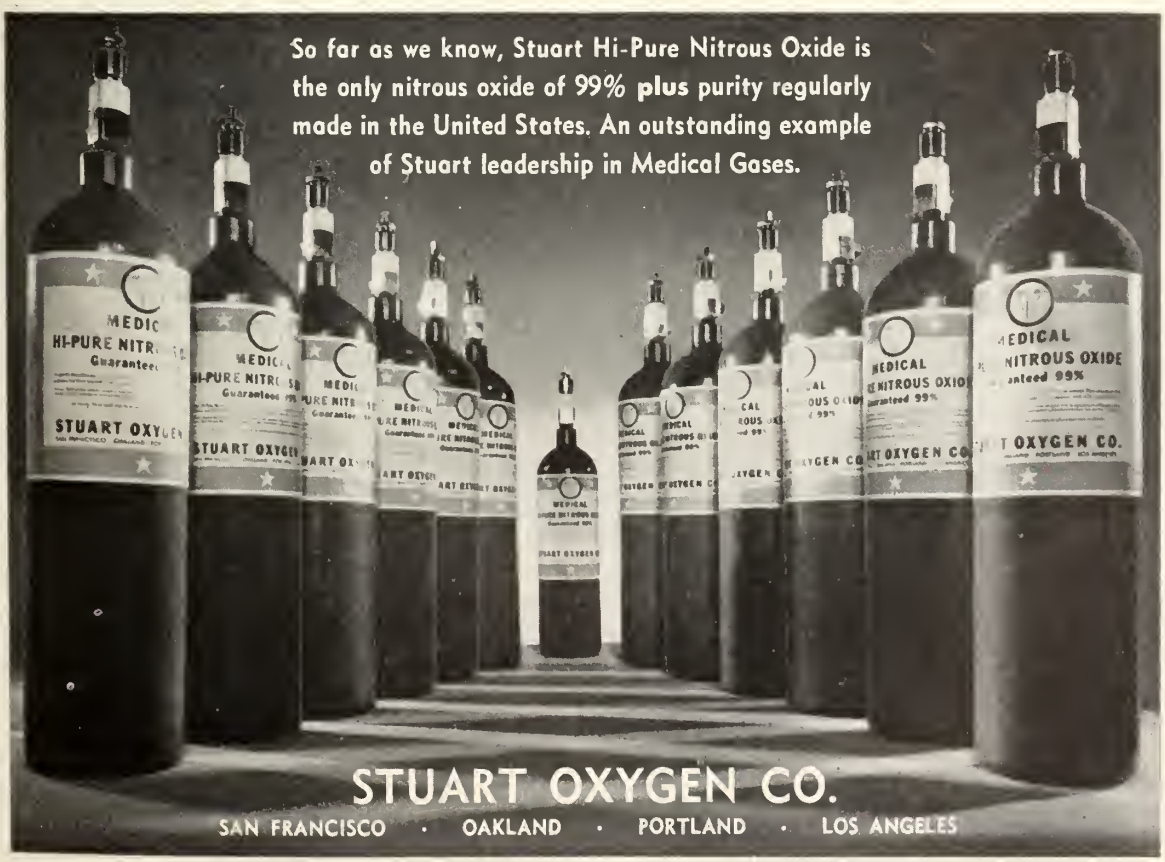
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References

1. Scherer, J. H.: Virginia M. Monthly, 72:289, July, 1945.
2. Travell, J. et al.: Conferences on Therapy, New York State J. Med., 47:387, Feb. 15, 1947.

JOURNAL SAYS PHYSICAL EXAMS FOR PILOTS HAVE DEPRECIATED

The tendency of the Civilian Aeronautics Administration to depreciate the quality of physical examinations for pilots has been assailed by both *The Journal of the American Medical Association* and the *Journal of Aviation Medicine*. The May 10 issue of *The Journal* of the A.M.A. says:

The Journal has commented previously on the failure of the Civilian Aeronautics Administration to have its physical examinations conducted by competent physicians. The *Journal of Aviation Medicine* points out that the department ruled that osteopaths could make these examinations a few years ago and now examinations are being accepted even from chiropractors. How many of the persons who observe air transport realize that this is the type of protection afforded by the government agency? When one contrasts the kind of education given to low grade nonmedical healers with the type of examination made by specialists who are really competent in examining the eyes, the ears and the other special senses on which safe flying so greatly depends, the folly of accepting examinations by the incompetent becomes clearly apparent. The *Journal of Aviation Medicine* points out that the bars have not thus far been lowered in the case of commercial and airline pilots, but the tendency to depreciate the quality of the examination makes hazard of such lowering imminent. Surely, here is a responsibility that the administrator cannot dodge.



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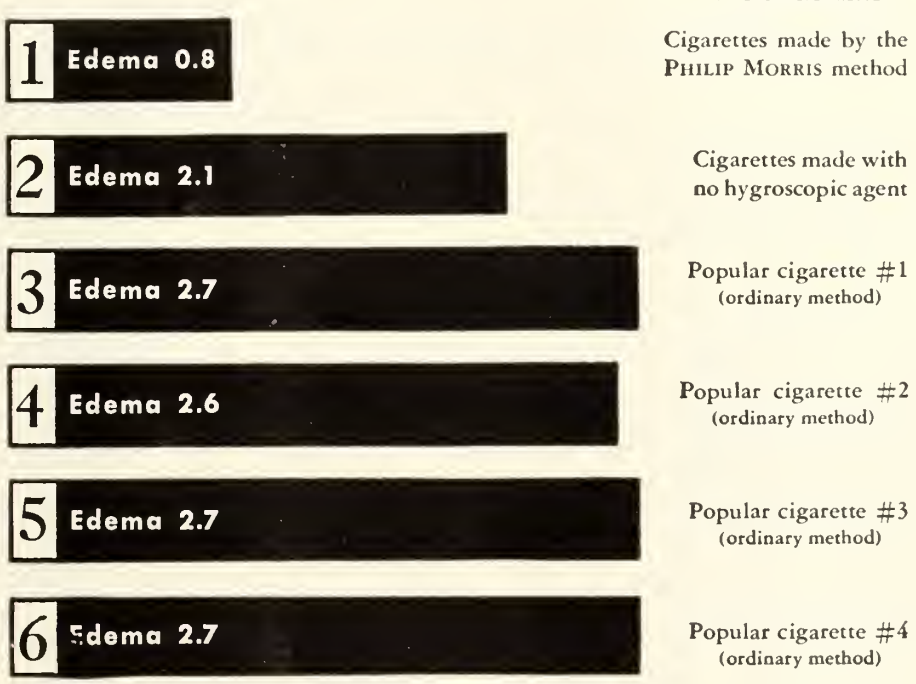
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N. Y. State Journ. Med. 35 No. 11,590* *Laryngoscope 1935, XLV, No. 2, 149-154*

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CUT IN V. A. BUDGET THREAT TO QUALITY OF MEDICAL CARE

Recent reduction by the Bureau of the Budget of the amount requested by the Veterans Administration to meet its needs "seems to threaten alarmingly" the quality of medical care for the veteran, according to an editorial in the May 24 issue of *The Journal of the American Medical Association.*

The editorial states in full:

"The tremendous advances made in the quality of medical services of the Veterans Administration in the past two years reflect the devotion of the new leaders to their ideals and the cooperation of the medical profession. When the war ended many physicians who could have returned to lucrative practice with full satisfaction for a duty well done elected to continue beyond the ordinary call of duty through service in the Veterans Administration. The enlistment of medical leaders meant more than appears on the surface, for it aided in causing many younger physicians to join the staff of the Veterans Administration. Thus the veteran himself benefited by the improved quality of medical personnel; less than 6,000 hospital beds have been closed for lack of staff. Even the closing of these beds was serious, but not nearly as serious as would have been the case had this program not advanced so well. Though the program was expanding in quality as well as in the number of patients to be served, the pace was maintained. An extensive outpatient program and a series of clinics were added, 25 per cent of whose patients would have otherwise had to seek hospitalization, even though outpatient treatment was more appropriate. The recent reduction by the Bureau of the Budget of the amount requested by the Veterans Administration to meet its needs

(Continued on Page 26)

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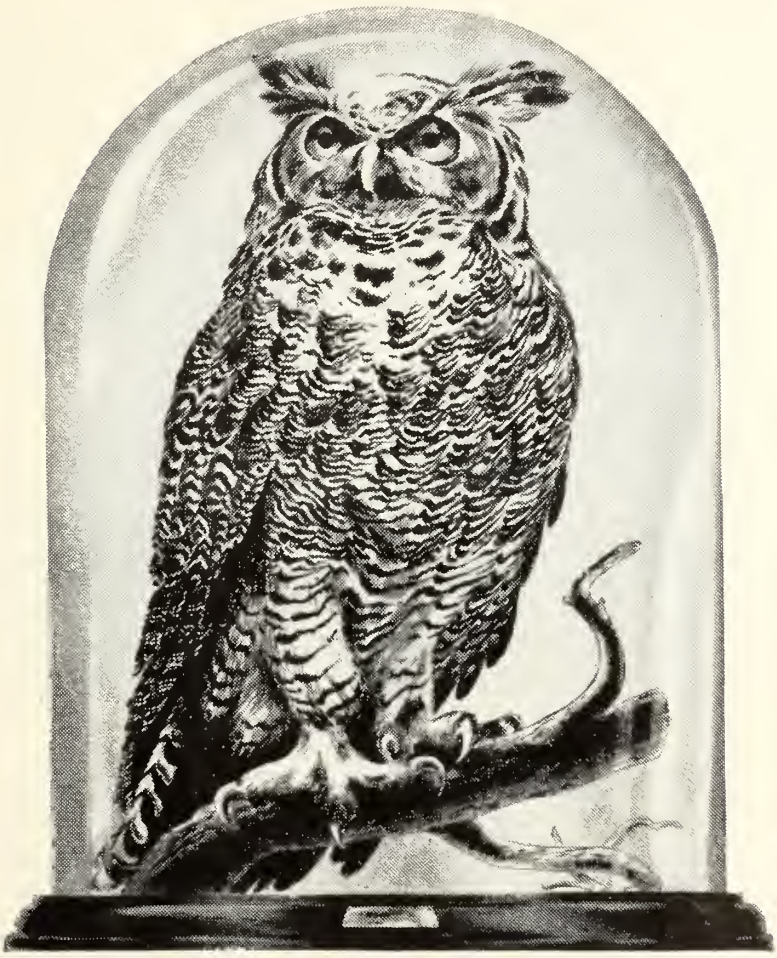
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CUT IN V.A. BUDGET THREAT TO QUALITY OF MEDICAL CARE

(Continued from Page 24)

seems to threaten alarmingly this whole achievement. Already the morale of staff is disturbed. The quality of service rendered by the Veterans Administration is today a leaven for the whole country. The budgetary needs to maintain that quality should be met to the full if far reaching disastrous effects are to be avoided."

THREE DISEASES CAUSE 80-90 PER CENT OF ALL CASES OF HYPOGLYCEMIA

Eighty to 90 per cent of all cases of hypoglycemia, an abnormally low level of sugar in the blood, result from three diseases which Jerome W. Conn, M.D., of Ann Arbor, Mich., defines so that treatment may be more successful.

Writing in the May 10 issue of *The Journal of the American Medical Association*, Dr. Conn differentiates the three types as follows:

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Organic hyperinsulinism is caused by the growth of a tumor or tumors in the pancreas which stimulate the production of insulin. This type is progressive in frequency and

(Continued on Page 30)

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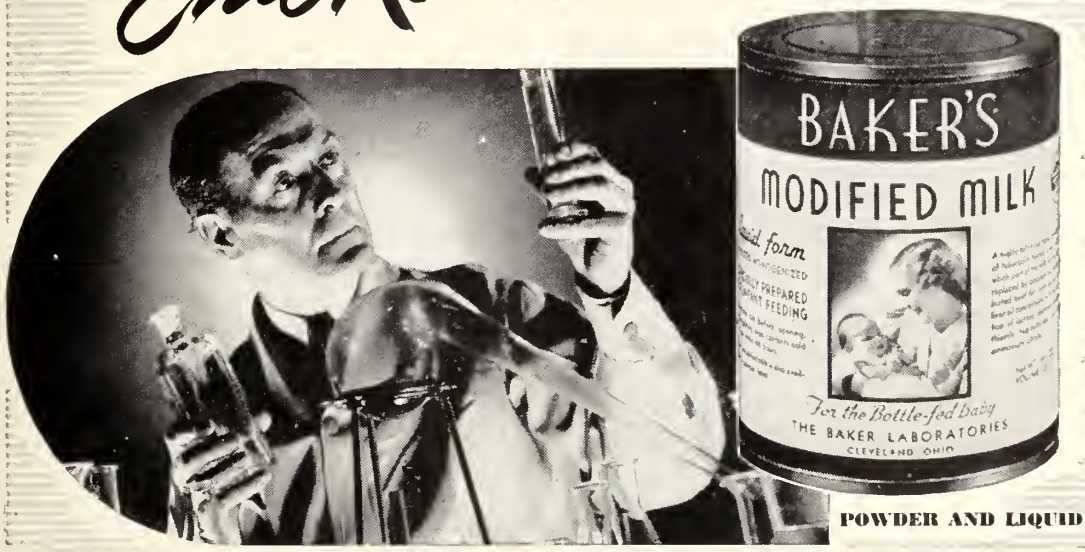
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These are "end results" of the years of research back of Baker's Modified Milk.

What the attainment of these results means to doctors is attested by the steadily increasing use of Baker's Modified Milk, which is advertised only to the medical profession. More and more doctors are prescribing Baker's Modified Milk because they find Baker's produces desired results with less trouble in most cases of infant feeding . . . that no change in dilution is needed as the baby grows older (just increase the quantity of feeding) . . . and the possibility of errors—always present when formulas are prepared in the home—is avoided.

To prepare Baker's for feeding merely dilute it to the prescribed strength with water, previously boiled. Baker's is available in both powder and liquid forms. Formulas made from liquid Baker's are especially easy to prepare; in some cases, such as the lack of refrigeration in hot weather, or when traveling, the powder form is preferable.

Doctors and hospitals are invited to write for full information and samples.

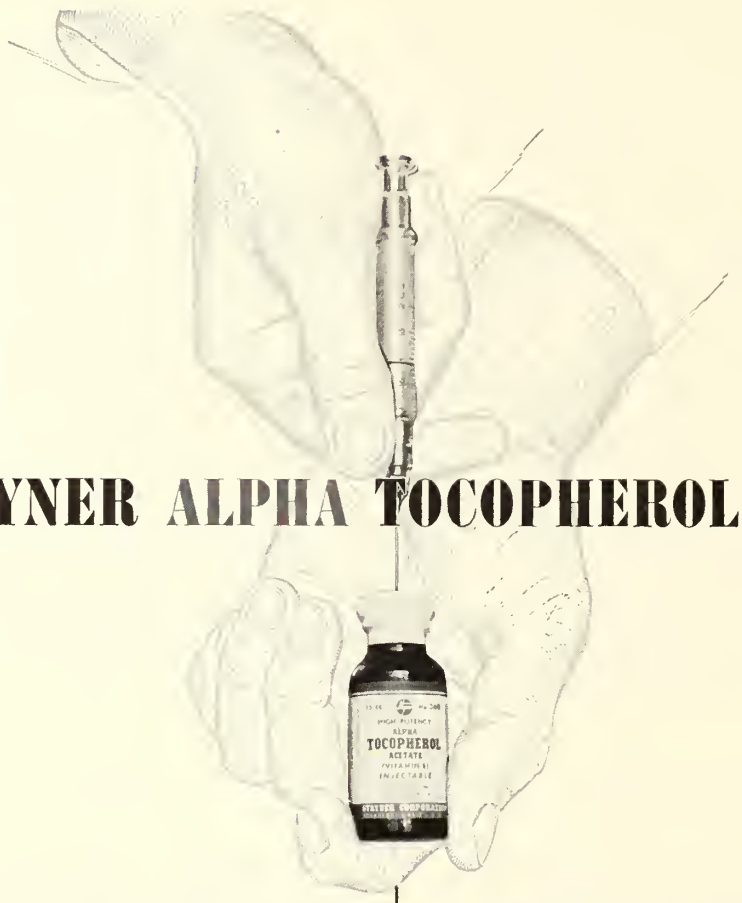
• Baker's Modified Milk is made from tuberculin-tested cows' milk in which most of the fat has been replaced by animal and vegetable oils with the addition of lactose, dextrose, gelatin, iron ammonium citrate, vitamins A, B1 and D. Not less than 400 units of vitamin D per quart.

ACCEPTED AMERICAN MEDICAL ASSN. Council on Foods

BAKER'S MODIFIED MILK

THE BAKER LABORATORIES, INC., CLEVELAND, OHIO BRANCH OFFICES: SAN FRANCISCO, LOS ANGELES and DENVER

Advertisers in your OFFICIAL JOURNAL *will appreciate requests for literature*



STAYNER ALPHA TOCOPHEROL ACETATE

Because of the extreme interest manifested by physicians in the use of Alpha Tocopherol in cases of threatened or habitual abortion, amyotrophic lateral sclerosis, abruptio placentae, congestive heart disease, and the anginal syndrome, Stayner is making this vitamin available in high-potency injectable form.

Stayner Alpha Tocopherol Acetate is tested three ways: *chemically* for potency, *physiologically* for lack of toxicity, and *biologically* for lack of contamination. These three tests assure safety of administration.

All western druggists can supply Stayner Alpha Tocopherol Acetate promptly in 15 cc multiple-withdrawal vials.

DESCRIPTION: (STAYNER Formula No. 360) Alpha Tocopherol Acetate 100 mg. per cc dissolved in refined Sesame Oil. Chlorobutanol 0.5% and Benzyl Alcohol 2% are added as preservatives, and to produce mild local anesthesia, reducing tenderness at site of injection. Supplied in 15 cc sterile rubber-diaphragm vials.

DOSAGE: Two general plans of administration have been followed: (1) Daily intramuscular injection of 50 to 100 mg. (2) Intramuscular injection of 100 to 300 mg. once or twice a week.

Recent investigations indicate that better results seem to follow combined intramuscular and oral treatment. Oral therapy consists of 50 mg. of Mixed Tocopherol (I.S. Vitamin E 30 mg.) one capsule, one to three times daily with meals. (STAYNER No. 160)

In Threatened Abortion: Alpha Tocopherol Acetate 200 mg. intramuscularly at onset of bleeding, repeated daily until bleeding ceases; after which 50 mg. of Mixed Tocopherol orally three times daily until period of viability is established.

ADMINISTRATION: Intramuscularly ONLY.

Stayner —— **PROFESSIONAL LITERATURE SENT ON REQUEST**

STAYNER CORPORATION • BERKELEY, CALIFORNIA

Advertisers in your Official Journal *will appreciate requests for literature*



AN EXCELLENT FIRST CEREAL

and well liked at any age

Malt-o-Meal meets every requirement for a first infant cereal food—a well rounded nutritional composition, blandness, easy digestibility, creamy smooth consistency, and absence of residue. It provides not only the nutrients ordinarily found in a wheat cereal, but also notable amounts of added thiamine, riboflavin, niacin and iron. Its freedom from grittiness and large particles makes Malt-o-Meal readily accepted by infants whose well developed lingual tactile sense promptly detects objectionably large particles. Older children and adults especially enjoy the delightful taste of this wheat cereal flavored with toasted malt. Malt-o-Meal is eaten with gusto by children, and merits inclusion in any well rounded breakfast.

CAMPBELL CEREAL COMPANY, Minneapolis, Minn.

Malt-o-Meal



Malt-o-Meal, an enriched wheat cereal flavored with toasted malt, provides per ounce (dry weight), 0.29 mg. of thiamine, 0.13 mg. of riboflavin, 1.09 mg. of niacin, and 2.00 mg. of iron. Thus Malt-o-Meal provides appreciably more thiamine, riboflavin, and iron than does whole wheat, and 78% of the niacin content of whole wheat.

THREE DISEASES CAUSE 80-90 PER CENT OF ALL CASES OF HYPOGLYCEMIA

(Continued from Page 26)

severity of attacks which occur before breakfast from two to eight a.m. and two to four hours after meals. The attacks are precipitated by skipped or late meals or exercise. Removal of these tumors results in complete alleviation of the entire disturbance without recurrence in the vast majority of cases.

The third type, hepatogenic hypoglycemia, is traceable to changes in the liver. This organ is responsible for the storage of glycogen, which is converted into sugar as the needs of the system require. However, if this storage does not take place because of some condition such as a diseased gallbladder, then the body is deprived of its needs. This type of hypoglycemia is also progressive in frequency and severity with attacks occurring before breakfast. These patients should be put on a diet both high in carbohydrate and high in protein.

ANNUAL LOSS IN MILK PRODUCTS, MEAT FROM BRUCELLOSIS STAGGERING

The annual food loss in milk, butter, beef, veal and pork from brucellosis reaches a staggering total in calories of the kind most needed by an underfed world, according to an editorial in the July 5 issue of *The Journal of the American Medical Association.*

Brucellosis, commonly known as undulant fever or Malta fever, is one of the most prevalent today and a source of potential danger to the national health. Goats, cows and hogs harbor the infection and man contracts it by drinking raw milk or handling infectious material.

The editorial estimates that "the total number of cases reported in the United States has averaged about 4,000 yearly for the past several years. Only the relatively severe acute illnesses are diagnosed and reported. Chronic infections outnumber the acute illness by a ratio of at least 10 to one but these chronic infections are rarely diagnosed.

(Continued in Back Advertising Section, Page 36)

"How can I get a book edited, printed, and bound?"

With professional care, EDIT, INC., will edit your manuscript, plan a dignified format, and handle all details of typesetting, printing, and binding.

A complete publication service for professional books

Edit *inc.*, 230 East Ohio St., Chicago 11, Illinois

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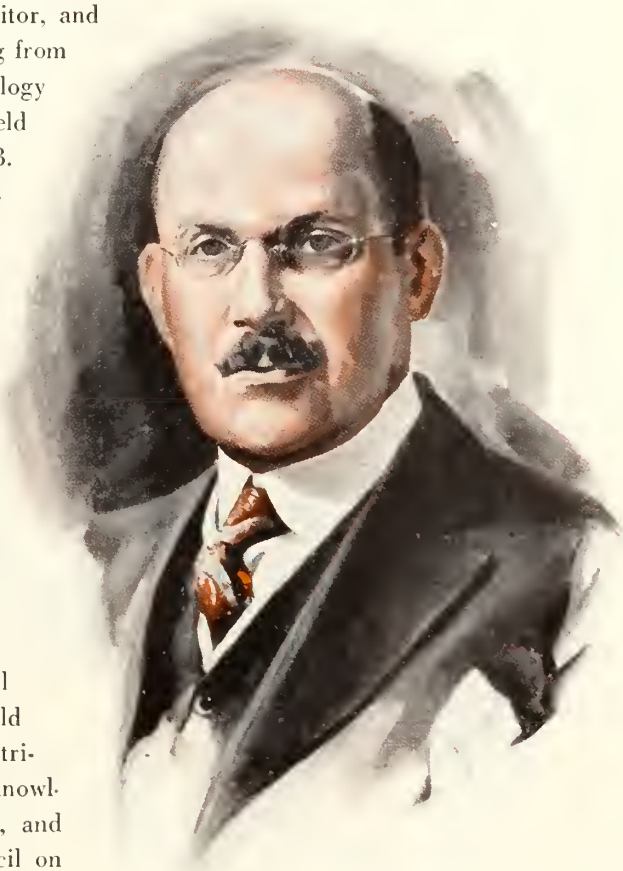
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MANUFACTURING CHEMISTS
2107 East Villa St., Pasadena 8, California

Advertisers in your OFFICIAL JOURNAL *will appreciate requests for literature*

Men and Amino Acids

Lafayette B. Mendel is recognized as a pioneer in the science of nutrition, and as a writer, editor, and educator of wide influence. On graduating from Yale University in 1891, he studied physiology and physiological chemistry in the Sheffield Scientific School, receiving his Ph.D. in 1893. In 1895 and 1896, he continued his studies abroad under Professor Heidenhain at Breslau, and Professor Baumann at Freiburg. Beginning as an assistant in physiological chemistry at Sheffield, Mendel became a full professor in 1903, and a member of the Governing Board. In 1921 he was named Sterling professor.

For many years, Mendel collaborated with the distinguished investigator of vegetable proteins, Thomas B. Osborne, conducting valuable researches on the comparative biologic value of proteins of differing amino acid composition, as well as in other fields of nutrition. His manifold contributions to our understanding of nutrition in the chemistry of life were acknowledged in numerous lectureships, honors, and awards. He was a member of the Council on Pharmacy and Chemistry of the American Medical Association from 1917 until the time of his death, and of the Committee on Foods from its inception.



LAFAYETTE BENEDICT MENDEL—1872-1935

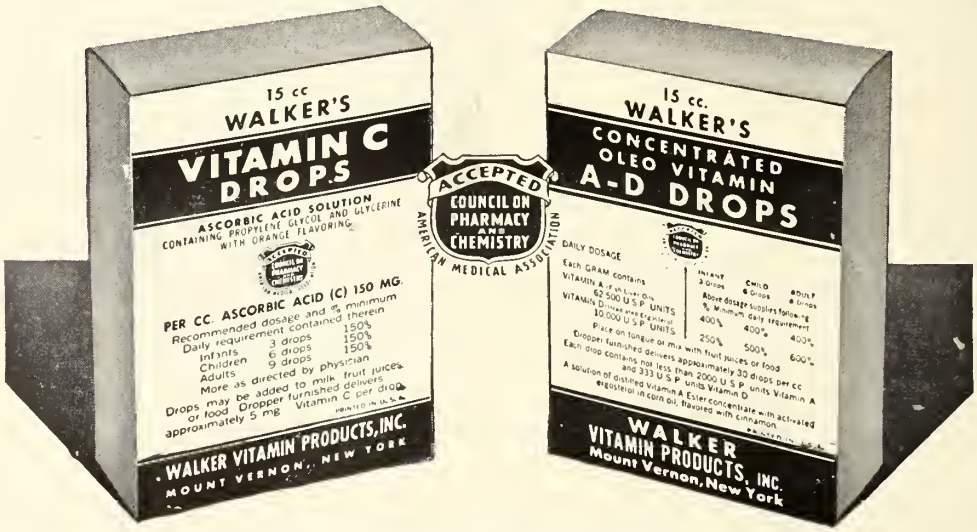
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Seventh in a series

WALKER

COUNCIL-ACCEPTED VITAMIN DROPS



Potent, convenient, flexible dosage form
Designated for use in pediatrics and geriatrics

VITAMIN C DROPS

Each drop supplies 5 mg. of vitamin C

Supplied in dropper bottles of 15 cc.

CONCENTRATED OLEO VITAMIN A-D DROPS

Each drop supplies 2,000 units vitamin A, 333 units vitamin D

Supplied in dropper bottles of 15 cc. and 60 cc.

Walker VITAMIN PRODUCTS, INC., MOUNT VERNON, N. Y.

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UNIFORM, ACCURATE,

CAREFULLY STANDARDIZED



SULFA DRUGS bearing the Lilly Label are prominent among the more recent medicinal agents of proved therapeutic value. They are noted for their uniformity in appearance, accuracy of dosage, and careful standardization. Available in logical dosage forms and sizes.

ELI LILLY AND COMPANY

INDIANAPOLIS 6, INDIANA, U. S. A.



A 12x15 reproduction of this Arthur Sarnoff color illustration, suitable for framing, is available upon request.

Doctors and Detectives

THE PHYSICIAN is usually among the first to visit the scene of a tragedy. In solving crime, the type and location of wounds, abrasions, or bruises may have distinct significance. Bloodstains, scientifically examined, may provide the convicting evidence. Skeletal remains often reveal important facts concerning sex and age. Police records emphasize the importance of medical aid in the solution of crime.

Broad knowledge, keen observation, and the ability to piece facts together into a coherent whole are characteristic attributes of the physician. These same accomplishments are equally important in the field of medical research. In the Lilly Research Laboratories, physicians team with specialists in many related fields of science to attack problems which confront the clinician.

AMEBIASIS



"The symptoms of amebiasis are bizarre and simulate other diseases. The amebic etiology should not be overlooked, since it is impossible to foretell when amebic dysentery may develop."[1]

The nonirritating, orally administered, high iodine amebacide —Diodoquin (5,7-diiodo-8-hydroxyquinoline)—"is well tolerated. . . . The great advantage of this simple treatment is that in the vast majority, it destroys the cysts of *E. histolytica* and is, therefore, especially valuable in sterilizing 'cyst-carriers.' It can readily be taken by ambulant patients...."[2]

1. D'Antani, J. S.: Amebiasis, Recent Concepts of Its Prevolence, Symptomatology, Diognosis and Treatment, Internat. Clinics 1:100 (March) 1942.

2. Mansan-Bahr, P.: Same Trapical Diseases in Generol Practice, Glasgaw, M. J. 27:123 (Moy) 1946.

ACCEPTED COUNCIL ON PHARMACY AND CHEMISTRY AMERICAN MEDICAL ASSOCIATION

DIODOQUIN

(5,7-DIIODO-8-HYDROXYQUINOLINE)

In bottles of 100 and 1000 tablets.

Diodoquin is the registered trademark of G. D. Searle & Co., Chicago 80, Illinois

SEARLE

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AMINOPHYLLINE

*Ingraloids**

THEOPHYLLINE ETHYLENEDIAMINE

Council ACCEPTED COUNCIL ON PHARMACY AND CHEMISTRY AMERICAN MEDICAL ASSOCIATION **Accepted**

Aminophylline 'Ingraloids' meets the exacting standards of purity and potency, for parenteral administration, of the Council on Pharmacy and Chemistry of the American Medical Association.

Aminophylline, 'Ingraloids,' are supplied as follows:

Each 2 Cc. contain:
0.24 Gm. (3¾ grains)
Item No. 150
0.49 Gm. (7½ grains)
Item No. 789

Each 10 Cc. contain:
0.24 Gm. (3¾ grains)
Item No. 987
0.49 Gm. (7½ grains)
Item No. 988

Each 20 Cc. contain:
0.49 Gm. (7½ grains)
Item No. 654

Packaged in 12, 25 and 100

* 'Ingraloids' is a trade name, registered in the U. S. Patent Office, of Ingram Laboratories, Inc., used to designate a brand of sterile medicinals for parenteral administration.

Write Professional Service Division for further information on this or other Ingram Products.

INGRAM
LABORATORIES, INC.
330 FRONT STREET • SAN FRANCISCO 11

BOARD OF MEDICAL EXAMINERS OF THE STATE OF CALIFORNIA

By FREDERICK N. SCATENA, M.D.
Secretary-Treasurer

Board Proceedings

While the number of applications being filed for physician's and surgeon's certificates is less than the number for the corresponding period last year, the Sacramento office is still receiving many inquiries from out-of-state doctors regarding licensure in California.

The following table gives the number of applications filed for the first six months in 1946 as compared with the corresponding period in 1947.

APPLICATIONS FILED

Class	Six months ended June 30	
	1947	1946
Written Examinations	349	380
Reciprocity (other states)	617	905
Government Credentials	49	61
National Board Credentials	132	140
Total	1,147	1,486

The Board has set November 9, 1947, as the date for the third oral and clinical examination for graduates of foreign medical schools.

Oral examinations were held July 19 and 20 at the Board office in San Francisco. One hundred and fourteen applicants were examined with 54 successfully passing. Commissioners on examination were appointed due to the large number of applicants appearing.

The Board appreciates the help given by the commissioners and feels the doctors who are commissioners have an opportunity to learn the method used for the oral examinations and also learn the reasons why over 50 per cent fail in the oral examination.

ANTISPASMODICS

Tim Holt was thrown from his horse and broke his cossyx. In case you don't know, that's the little group of bones at the end of the spine.—*From Harrison Carroll's Hollywood column in the San Francisco Call-Bulletin.*

We didn't know, anyway.

A man who in other respects appears to be quite rational has written in to suggest that if we have among our acquaintances a masseur who wishes to brighten up his advertising, we might offer him the slogan, "The Paws that Refreshes."

Honest good humor is the oil and wine of a merry meeting, and there is no jovial companionship equal to that where the jokes are rather small, and the laughter abundant. —*Washington Irving.*



Rx *Quality Nutritional Preparations for the Physician's Prescription...*

All prescriptions bearing the recognized name of "Borden" (pioneers in the field of nutrition) conform to the highest standards of biologic requirements, and are subject at all times to the most rigid controls of quality and purity.

for infants



BIOLAC — *a complete food* (when vitamin C only is added) — a contribution to optimum nutrition, because of high-protein, low fat, and added lactose content — reinforced with vitamins A, B_1, B_2 and D, and iron.



DRYCO — the *high protein food*, with intermediate carbohydrate content for formula flexibility, and low fat content — quickly soluble in cold or warm water.

for adults



GERILAC — a *powdered modified milk* for special dietary uses. A rich source of essential nutritive elements for pre- and postoperative cases, convalescence, pregnancy and lactation, soft and liquid diets, and for the aged. Palatable and easily digested; *only water required for dilution.*

for infants and adults



MULL-SOY — for your patients allergic to milk — a hypoallergenic soy concentrate with essential nutritional values of cow's milk; easily digestible, palatable, well-tolerated.



BETA LACTOSE— *milk's natural carbohydrate*, exceptionally palatable, highly soluble — for formula modification for infants, and corrective therapy in constipation in adults.



KLIM*— *spray-dried whole milk with soft curd properties*, invaluable when availability or safety of fresh milk is uncertain — readily soluble in cold or warm water. For infant feeding, and for peptic ulcer and other special adult diets.

**The nutritional statements of this advertisement are acceptable to the Council on Foods and Nutrition of the A.M.A.*

Available at all drug stores — complete information to physicians on request

Borden's PRESCRIPTION PRODUCTS DIVISION

350 MADISON AVENUE • NEW YORK 17, N. Y.

ANNUAL LOSS IN MILK PRODUCTS, MEAT FROM BRUCELLOSIS STAGGERING

(Continued from Front Advertising Section, Page 30)

If 4,000 cases are reported yearly it is probable that from 40,000 to 100,000 infections occur yearly."

Citing investigations made for the state of Michigan, the editorial points out that the average infected cow was found to produce 2,065 pounds less milk per lactation period than the noninfected cow. Estimating that 10 per cent of 1,080,000 cows in the state of Michigan were infected, the 108,000 infected cows resulted in a total milk loss of 222,904,000 pounds of market milk yearly—enough to supply about 557,000 persons for one year.

The editorial concludes that "development of still better methods in diagnosis, treatment and prevention, in animals and man, depends upon an increasing 'brucellosis-mindedness' and continued investigation. The disease continues to be a major public health problem. Pasteurization of all dairy products must remain the greatest bulwark against human infection until methods of control can be perfected."

Rent an Office
Buy or Sell Equipment
Find an Associate
Read and Advertise in
CALIFORNIA MEDICINE'S
CLASSIFIED ADVERTISING SECTION

The Alexander Sanatorium, Inc.

Situated in the Foothills of
BELMONT, CALIFORNIA

Specialized care of Convalescents; also NERVOUS, MENTAL and ALCOHOLIC Patients. Experienced Staff for the application of INSULIN and ELECTRIC SHOCK Therapies and for the CONDITIONED REFLEX TREATMENT of ALCOHOLISM.

Recognized by the American Medical Association; Member of Association of Private Mental Hospitals and of the Western Hospital Association.

MRS. A. S. ALEXANDER, *President* Telephone: BELMONT 40

An Exceptional School

UNUSUAL CHILDREN—boys and girls who are slow in learning, who are not adjusted to the environment of home or school, who have emotional difficulties—these are the children who are sent to the Devereux Schools—usually on recommendation of a psychiatrist, a pediatrician, or the family physician.

Exceptional children need an exceptional school. Devereux, with thirty-five years of experience behind it, is equipped and staffed to meet the most exacting professional standards.

At Santa Barbara, the Devereux School of California, opened in 1945 on a three hundred and fifty acre ranch bordering on the Pacific Ocean, has an enrollment of seventy students. At Devon, Pennsylvania, there are twelve units enrolling more than four hundred.

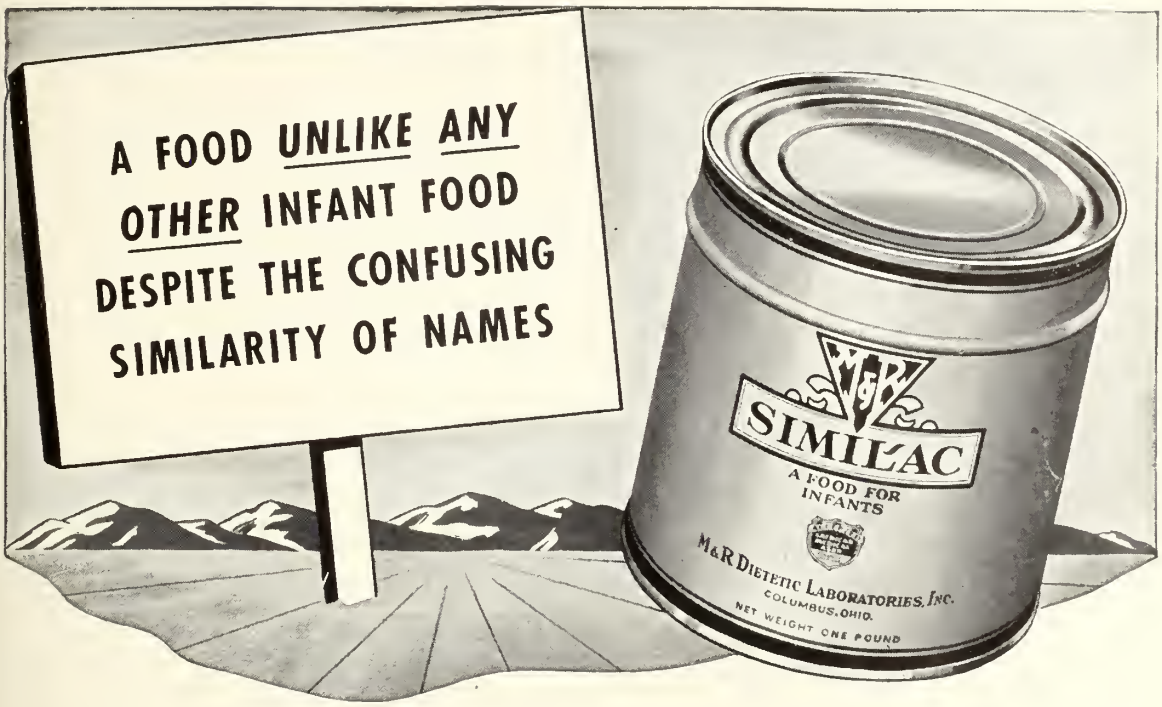
For catalogue and further information address Helen V. Barclay, Principal.

HELENA T. DEVEREUX, *Director*

Devereux Schools

Under the Devereux Foundation, a non-profit organization

Ask for New Catalogue of Ranch School Box 1079, Santa Barbara, California



THE FAT of Similac is not all butter fat, but a homogenized combination of fats that is balanced chemically and metabolically to the infant's requirements.

THE PROTEIN of Similac is rendered soluble to a point approximating the soluble protein in human milk.

THE CARBOHYDRATE in Similac is lactose.

THE MINERALS in Similac are adjusted to closely approximate the minerals of breast milk.

THE CURD TENSION of Similac is the same as that of breast milk — consistently zero.

No other substitute resembles breast milk in all of these essential respects.

M & R DIETETIC LABORATORIES, INC. • COLUMBUS 16, OHIO

ACCEPTED AMERICAN MEDICAL ASSN. Council on Foods and Nutrition

A powdered, modified milk product, especially prepared for infant feeding, made from tuberculin tested cow's milk (casein modified) from which part of the butter fat has been removed and to which has been added lactose, cocoanut oil, cocoa butter, corn oil, and olive oil. Each quart of normal dilution Similac contains approximately 400 U.S.P. units of Vitamin D and 2500 U.S.P. units of Vitamin A as a result of the addition of fish liver oil concentrate.

SIMILAC

Similar to breast milk

Advertisers in your OFFICIAL JOURNAL *will appreciate requests for literature*

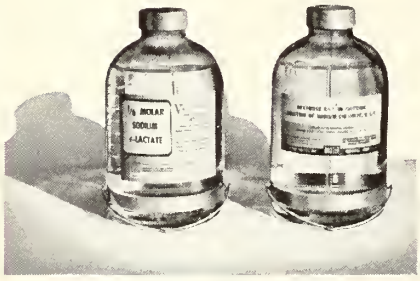


POSITIVE IDENTIFICATION AT A GLANCE

With New Baxter

BILLBOARD

LABELS



The increased readability of new Vacoliter labels is apparent when compared to previous label design (above). Even old label was more legible than others in the field. Below, actual comparison of new and old label on top shelf of Central Supply; note superior legibility of new design.



Precious hospital minutes are saved with the new Vacoliter *"Billboard"* labels, featuring simplified titles that can be read at a distance of 10 feet or more.

The bold, unmistakable letters reduce the chance of mistakes and confusion, even when Vacoliters are stored on top shelves or in dim corners of supply rooms. The *right* solution is more easily selected and delivered to the bedside.

This advanced label design is in the Baxter tradition of leadership which was initiated by the late Dr. Baxter in introducing commercially-prepared solutions to the American medical profession.

Today, you are offered this improved label on solutions which are as pure and safe as the many years of Baxter pioneering leadership can make them.

Vacoliter advantages should be available in your hospital. If by chance they are not, a note to the Laboratories will bring a friendly Baxter representative, with his great fund of parenteral-infusion information based on Baxter's many years of specialization in this important field of modern therapy.

DON BAXTER, INC.

RESEARCH AND PRODUCTION LABORATORIES — GLENDALE 1, CALIFORNIA

RENT AN OFFICE, BUY OR SELL EQUIPMENT, FIND AN ASSOCIATE. READ AND ADVERTISE IN CALIFORNIA MEDICINE'S CLASSIFIED ADVERTISING SECTION.

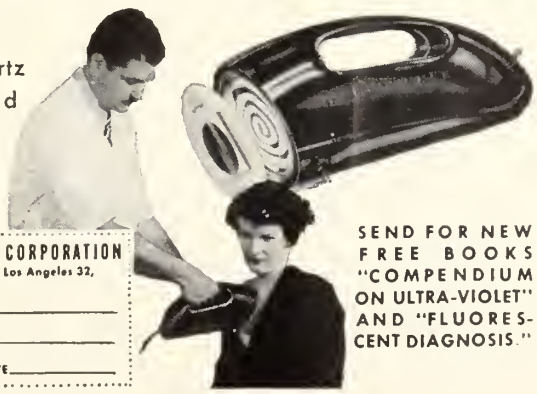


THE BIRTCHER-BUILT

SPOT-QUARTZ

FOR INTENSE ULTRA VIOLET LOCALIZED IRRADIATION

- Fear of blistering the patient has stopped many from using intense Ultra Violet radiation therapy.
- Using a SPOT-QUARTZ LAMP, dosages of 20 . . . 30 . . . 40 times E.D. (Erythema Dose) were administered to a group of subjects sensitive to Ultra Violet sunburn. Spot irradiations were imposed on normal untanned abdominal skin. Intense erythema reactions followed in a few hours, but **not** one subject showed ANY SIGN OF BLISTERING.
- The Spot-Quartz is a safe and effective Ultra Violet lamp.





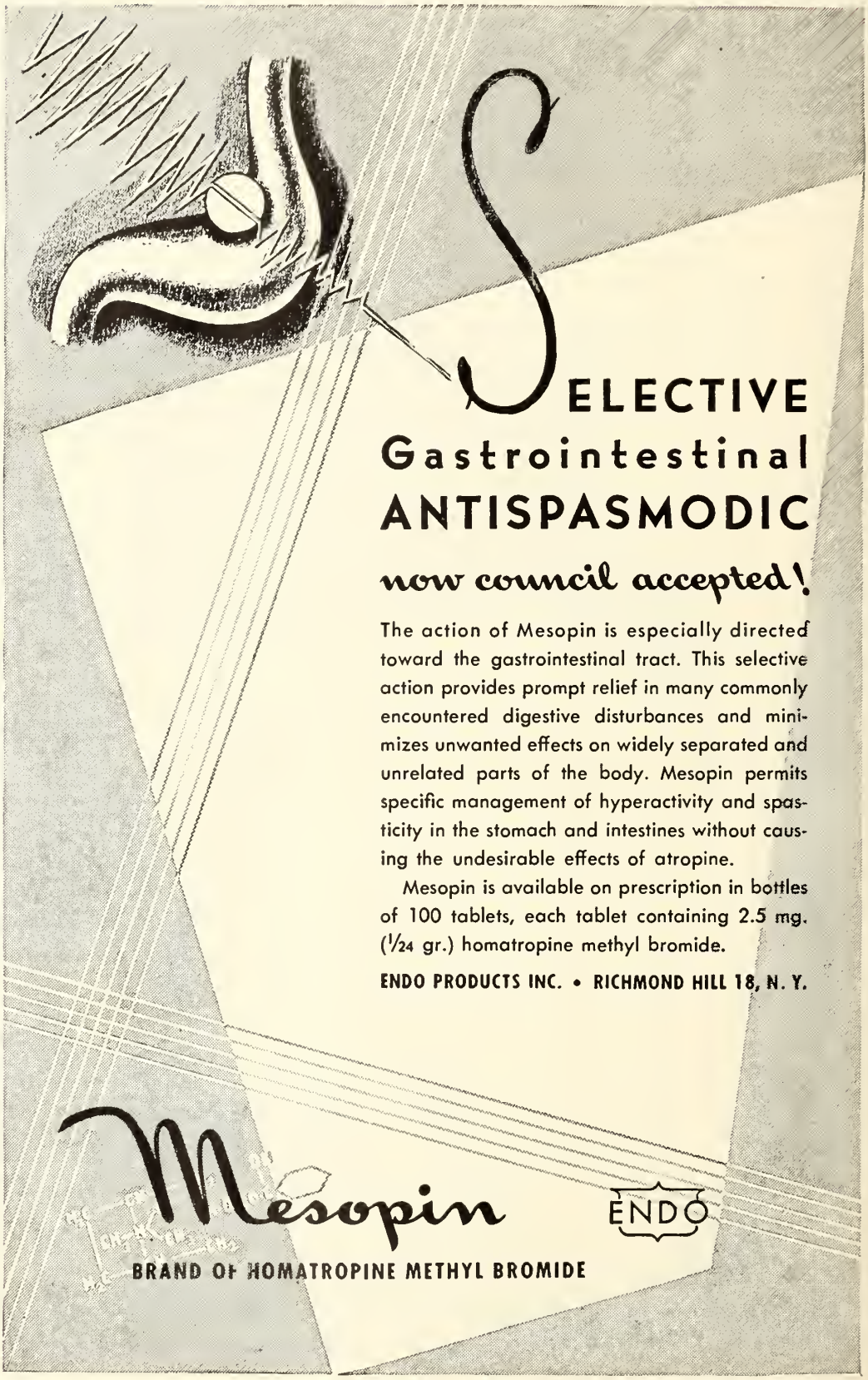
THE BIRTCHER CORPORATION
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SEND FOR NEW FREE BOOKS "COMPENDIUM ON ULTRA-VIOLET" AND "FLUORESCENT DIAGNOSIS."


SELECTIVE
Gastrointestinal
ANTISPASMODIC
now council accepted!
The action of Mesopin is especially directed toward the gastrointestinal tract. This selective action provides prompt relief in many commonly encountered digestive disturbances and minimizes unwanted effects on widely separated and unrelated parts of the body. Mesopin permits specific management of hyperactivity and spasticity in the stomach and intestines without causing the undesirable effects of atropine.
Mesopin is available on prescription in bottles of 100 tablets, each tablet containing 2.5 mg. (1/24 gr.) homatropine methyl bromide.
ENDO PRODUCTS INC. • RICHMOND HILL 18, N. Y.
Mesopin
ENDO
BRAND OF HOMATROPINE METHYL BROMIDE

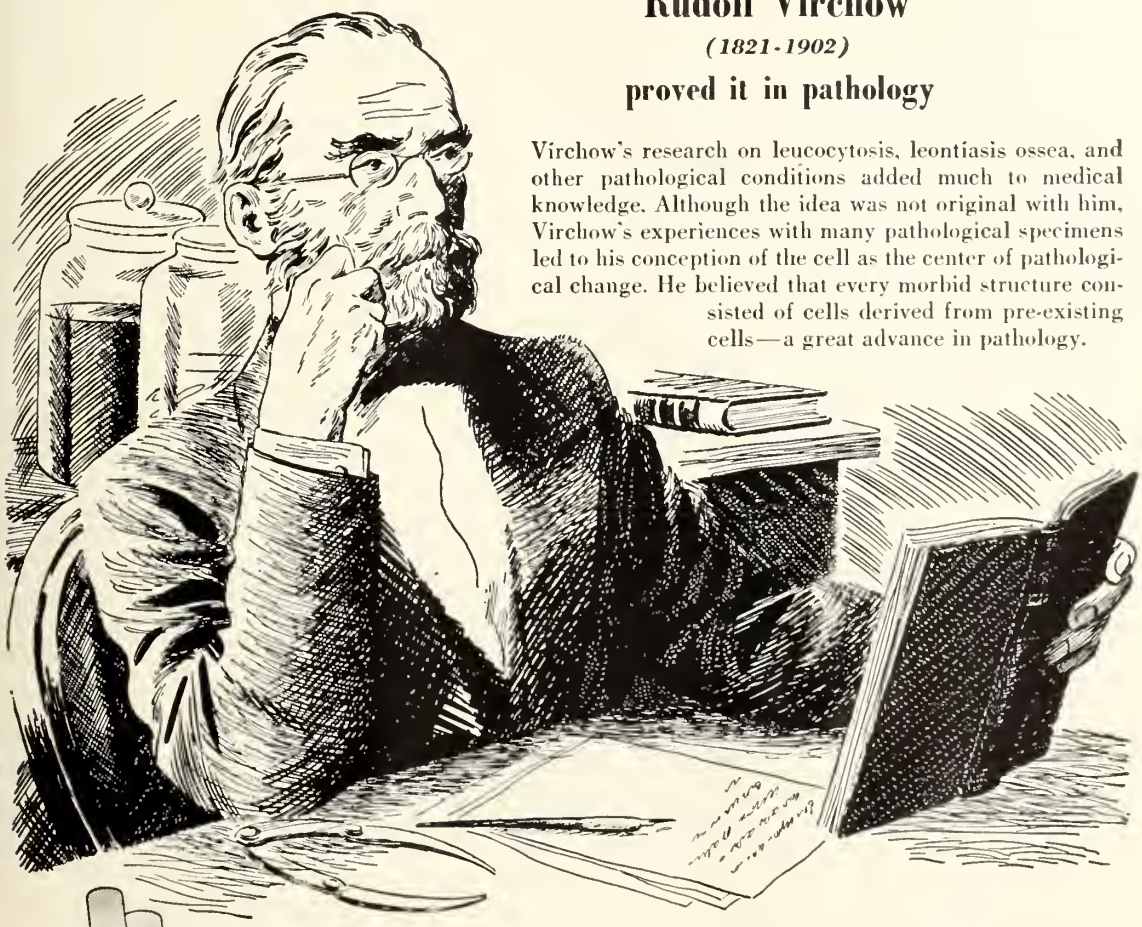
Experience is the Best Teacher

Rudolf Virchow

(1821-1902)

proved it in pathology

Virchow's research on leucocytosis, leontiasis ossea, and other pathological conditions added much to medical knowledge. Although the idea was not original with him, Virchow's experiences with many pathological specimens led to his conception of the cell as the center of pathological change. He believed that every morbid structure consisted of cells derived from pre-existing cells—a great advance in pathology.



Yes, and experience is the best teacher in smoking too!

EXPERIENCE during the wartime shortage taught smokers the differences in cigarette quality. Millions of people smoked more different brands then than they would normally have tried in years. More smokers came to prefer Camels as a result of that experience, so that today more people are smoking Camels than ever before.

But, no matter how great the demand, we don't tamper with Camel quality. Only choice tobaccos, properly aged, and blended in the time-honored Camel way, are used in Camels.





According to a recent Nationwide survey:

MORE DOCTORS SMOKE CAMELS

than any other cigarette

R. J. Reynolds Tobacco Co.
Winston-Salem, N. C.

Advertisers in your OFFICIAL JOURNAL *will appreciate requests for literature*

SURGERY, X-RAYS AID IN CANCER TREATMENT OF LUNG AND LARYNX

(Continued from Page 38)

Thirty-nine patients remain alive, and a number of these will probably die of recurrence or spread of the disease.

Maurice Lenz, M.D., Professor of Clinical Radiology, Columbia University College of Physicians and Surgeons, New York, states that of 110 patients who received x-ray treatment for cancer of the larynx at the Presbyterian Hospital between 1931 and 1941, 30 were free from clinical evidence of cancer between five and 14 years. Of these, 23 patients are still alive.

Dr. Lenz points out that x-ray treatment is the method of choice for early cancer of the vocal cords but when the cancer spreads then laryngectomy is necessary. This operation requires the removal of the larynx.

URGE WIDER USE OF RADIUM FOR ASTHMA TREATMENT IN CHILDREN

Treatment of 34 asthmatic children with radium proved to be so encouraging that three Baltimore physicians urge more extensive use of this new type of therapy in the April 12 issue of *The Journal of the American Medical Association.*

The physicians—Arthur T. Ward, Jr., Samuel Livingston and Dean A. Moffat, from the Departments of Otolaryngology, Pediatrics and Allergy, division of the Medical Clinic, of the Johns Hopkins University School of Medicine and Johns Hopkins Hospital—state that 15 patients were completely relieved of asthmatic attacks; five children were relieved to such a degree that they have only an occasional mild attack; three children showed moderate improvement and 11 have obtained no relief.

(Continued on Page 48)

THE CALIFORNIA SANATORIUM

Fully equipped for the diagnosis and modern treatment of diseases of the chest, including tuberculosis and other respiratory diseases

BELMONT, CALIFORNIA
Phone BElmont 100

San Francisco Office: 450 Sutter Street
Phone DOuglas 2-5793

THOMAS B. WIPER, M.D.
Director and Consultant in Thoracic Surgery

G. F. FAIRBAIRN, M.D.
W. N. TORRE, M.D.
Resident Clinicians



FOR *Every* BIFOCAL PRESCRIPTION

—there is a Bausch & Lomb lens to fill precisely your requirements. Available now in increased quantities, these bifocal lenses are quality controlled from glass to finished blank. Let our laboratories provide you with accurate, modern bifocal prescription service.

RIGGS OPTICAL CO.
distributors of
BAUSCH & LOMB PRODUCTS



Pyribenzamine

High-concentration Elixir Pyribenzamine hydrochloride now provides a second administration form of this proved antihistaminic. Containing 20 mg. of Pyribenzamine hydrochloride per 4 cc. (teaspoonful), the Elixir has obvious advantages in special cases, notably in infants and children, and in adults who prefer liquid medication.

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Cephalin-Cholesterol Flocculation Test	Negative	Positive
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DOCTOR CITES WAY TO COMBAT RISING DIPHTHERIA FIGURES

Diphtheria has made an alarming comeback, according to a Chicago doctor, who cites 18,541 reported cases in the United States in 1945 as against 14,126 cases in 1944 and points to an even higher trend for the first five months of 1946—7,491 reported cases as compared with 5,937 during the same period in 1945.

Paul S. Rhoads, M.D., Associate Professor of Medicine, Northwestern University Medical School, writing in the current issue of *Hygeia*, health magazine of the American Medical Association, states that "according to the yearly reports of the United States Public Health Service about one of each 13 diphtheria patients in this country dies of the disease—in spite of a potent antitoxin supplied free for treatment by most state health departments."

Diphtheria during the war years was and still is the major epidemic disease in Europe, states the author. "In 1943-44 it is estimated that more than 2,000,000 cases," writes Dr. Rhoads, "of which 100,000 were fatal, occurred in Europe exclusive of Russia. The epidemic is still raging. Several localized outbreaks in this country have been traced directly to military personnel returned from the war theaters."

The author cites other investigators who indicated that German prisoners captured in Africa and interned in this country frequently had diphtheria of the throat or skin and were the reservoir from which many cases of the disease spread to American soldiers and civilians.

Dr. Rhoads suggests that "if diphtheria is to be prevented from reaching epidemic proportions in the United States, public health officials, physicians and parents must recheck the immunity status of all children and young adults, and properly immunize the susceptible."

The Schick test, named for its originator, indicates susceptibility to the disease. But because there is no way of knowing in advance just how long artificial active immunity against diphtheria will last, the physician suggests that in order to be on the safe side the Schick test should be repeated about every two years during the ages of greatest exposure—that is, from three to 18.

The most effective and preferable preparation for immunization is diphtheria toxoid. "Ramon in 1923 discovered that diphtheria toxin could be rendered relatively nontoxic by adding formalin to it, without greatly reducing its ability to stimulate antitoxin formation in the tissues of the persons receiving it," states the author, adding: "If a full course of three—or better, five—injections of increasing dosage is employed, the method is more effective than toxin-antitoxin [prepared from the serum of immunized goats] and avoids sensitization of the recipient to any serum. Thus it is the preferable method. Usually it is administered at intervals of three to four weeks, but the doses may be given at weekly intervals with safety.

"If sufficient dosage is given, 90 to 95 per cent of susceptible persons are immunized."

Dr. Rhoads says that every one directly exposed to diphtheria but showing no evidence of illness should have germ cultures made from swabbings of the throat in addition to a Schick test. Within 12 hours the cultures may be examined. If diphtheria bacilli are found, the persons harboring them may be injected with diphtheria antitoxin, a preparation made of the serum of immunized animals, usually horses.

"Thus," Dr. Rhoads states, "a good supply of ready-made antitoxin is put into the subject's circulation and he is passively protected for that exposure. However, such passive protection lasts only two or three weeks, so that a week after receiving the antitoxin he should begin a series of toxoid injections so that he may become more or less permanently immunized."



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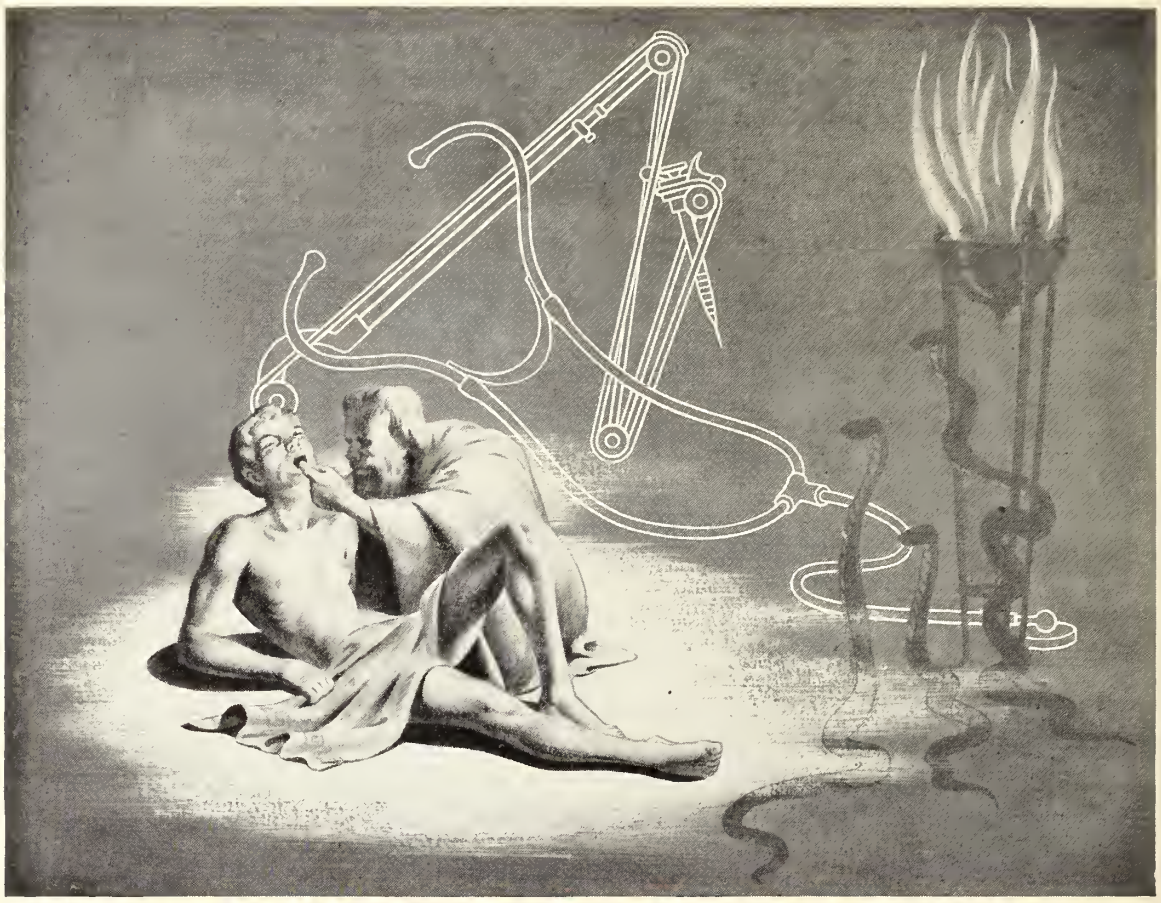
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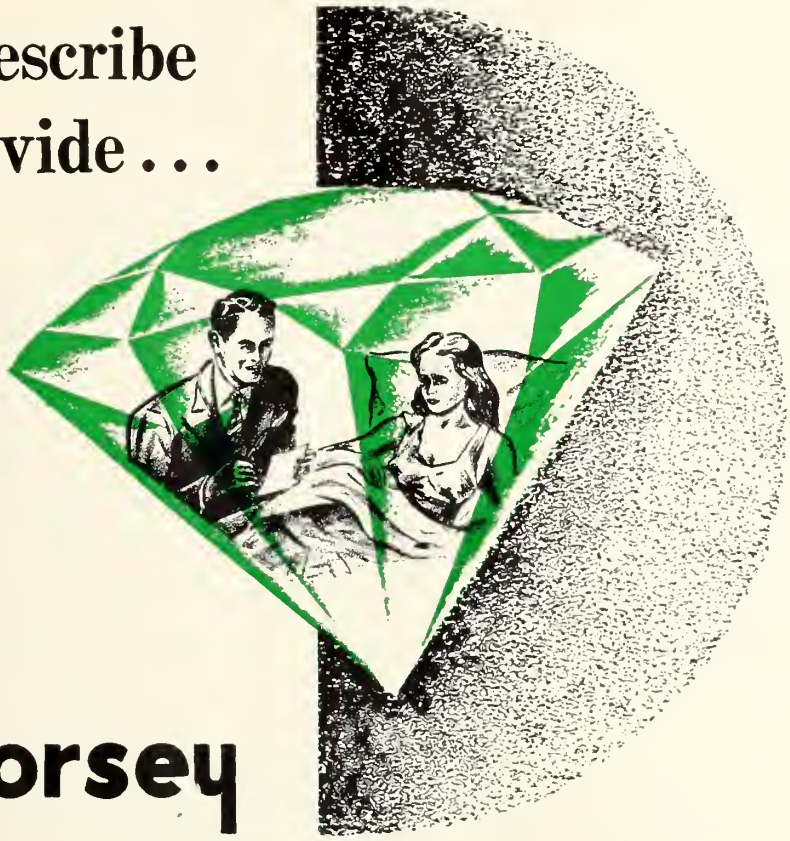
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(Continued from Page 42)

The 34 patients were all under 14 years of age. They were chosen for this study because they had recurrent attacks of asthma and masses of adenoid tissue in the nasopharynx (the back of the nose). Twenty-four children had a family history of allergic disease and 18 children had allergic manifestations besides their asthmatic symptoms.

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In conclusion, the authors state that the "object of this report is to arouse interest in this new form of therapy, so that its larger use may prove and extend the true value that we consider evident from the results of this detailed study and from experience with hundreds of cases not included herein."



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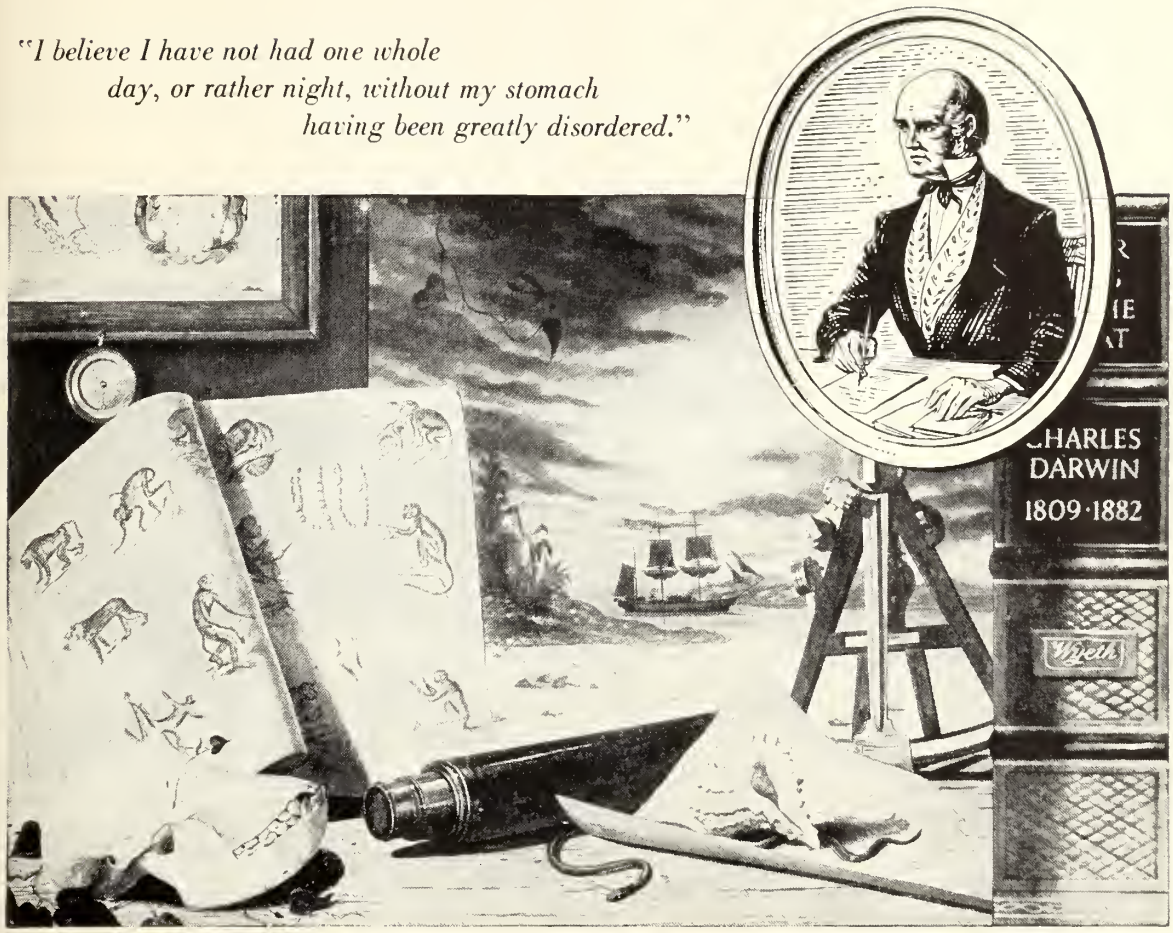
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[1]*Rehfuss, M. E., The Ulcer Life, Clinics 3:480-493 (Oct.) 1944*

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WARN HOSPITAL BLOOD BANKS MAY TRANSMIT JAUNDICE TO PATIENTS

Emphasizing the danger of transmitting serum jaundice through hospital blood banks, three Boston physicians suggest preventive measures in the July 5 issue of *The Journal of the American Medical Association.*

The physicians—Herbert Scheinberg, Thomas D. Kinney and Charles A. Janeway from the Departments of Medicine and Pathology of the Peter Bent Brigham Hospital and the Harvard Medical School, and the Departments of Pediatrics of the Children's Hospital and the Harvard Medical School—observed 11 cases of hepatitis (inflammation of the liver) in the course of a year in which 2,443 transfusions of blood and plasma were given.

Jaundice occurs when a bile-pigment or coloring matter called bilirubin, manufactured in the liver, gets into the blood and causes a yellowish discoloration of the skin, tissue linings and fluids of the body.

Serum jaundice is a form of acute liver inflammation occurring after an interval of 40 to 180 days following transfusion of whole blood, serum or plasma. Three blood donors, subsequently investigated in this series, were found to have had jaundice at some previous period or to have been exposed to someone who had.

The authors explain the operation of a blood bank and its dangers. First, a brief history is taken from each donor, which is designed to exclude those with malaria, syphilis or an acute illness. Approximately 500 cc. of blood are

(Continued on Page 54)

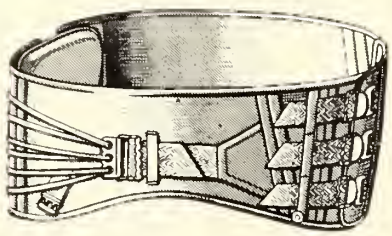
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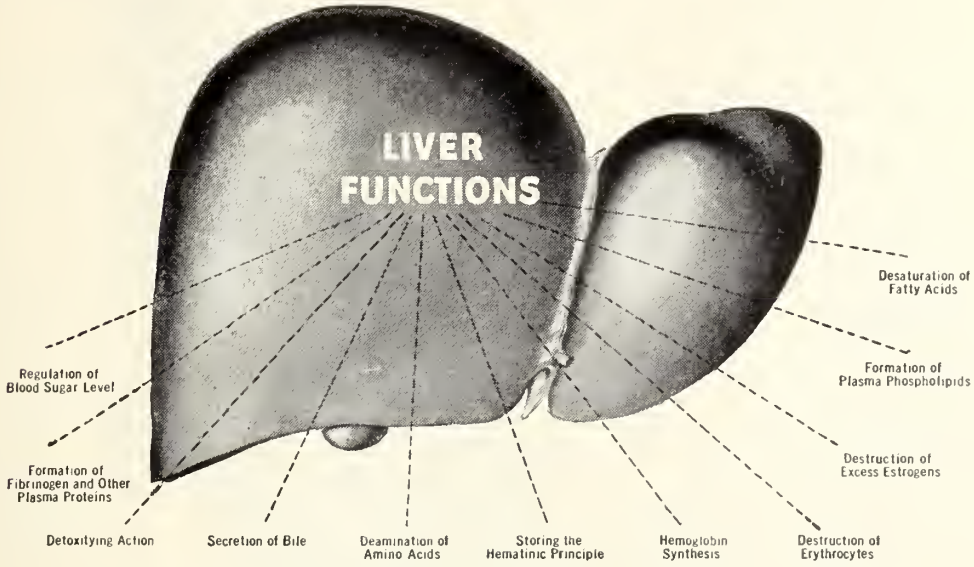
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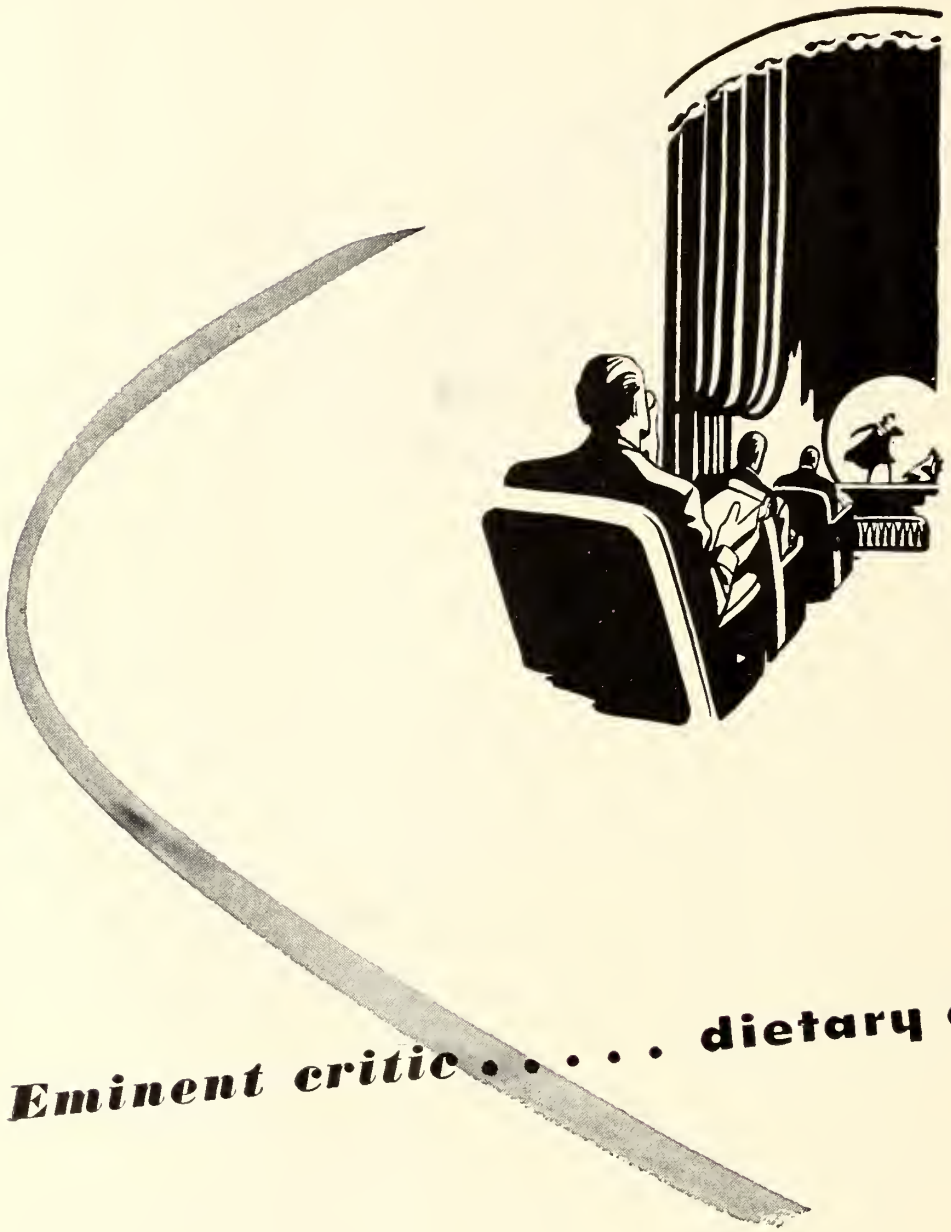
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WARN HOSPITAL BLOOD BANKS MAY TRANSMIT JAUNDICE TO PATIENTS

(Continued from Page 50)

then drawn and used as whole blood, if needed, at any time during the ensuing five to seven days. At the conclusion of this period the red cells are discarded and the plasma (the fluid portion of the blood) from 10 to 15 bottles is combined to make a pool. Each pool is numbered and a record made of the donors whose plasma it contains. The pool is then frozen and stored in the frozen state until needed.

Of the 11 patients who developed jaundice after transfusion from this pool, four died, a mortality of 36 per cent.

"The basis for condemning the practice of pooling plasma is the fact that the amount of infective serum necessary to produce the disease is incredibly small," state the physicians.

They suggest that the following preventive measures be put into effect immediately: greater efforts should be made to detect the infectious donors; the practice of pooling plasma should be curtailed, and lots of plasma should be given to as few recipients as possible.

Blood, in their opinion, should not be taken from any person who has ever had jaundice or hepatitis; (2) had contact with a person with jaundice in the past year; (3) received human blood or its derivatives or (4) been a hospital patient in the past year.

In the future, the doctors suggest the use of whole blood and plasma fractionation products in preference to pooled plasma. Plasma fractionation is more potent than plasma because it is derived by separating plasma proteins into components responsible for a particular function. Thus the concentrate can be used appropriately in the treatment of specific conditions.



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1. Anderson, N. A.: Penn. Med. J., *48*:566-8 (Mar.) 1945

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CIRRHOSIS OF LIVER NOT SYNONYMOUS WITH ALCOHOLISM, DOCTORS SAY

A serious disorder of the liver, known as cirrhosis, has been persistently identified as alcoholic in origin. Three Philadelphia doctors suggest in the interest of scientific accuracy "that all reference to any type of cirrhosis as 'alcoholic cirrhosis' be abandoned."

Despite the progress of medical science in recent years in the study of the origin of cirrhosis of the liver, "its cause and mode of development continue to remain part of the mysteries of medicine," according to Drs. Russell S. Boles, Robert S. Crew and William Dunbar, from the Medical and Pathological Departments of the Philadelphia General Hospital, writing in the June 21 issue of *The Journal of the American Medical Association.*

Portal cirrhosis, the type most frequently found in this country, is generally accepted as being synonymous with alcoholic cirrhosis, state the authors. In the portal area is a branch of the portal vein which drains the blood from the intestinal tract. When the portal vein becomes obstructed by degenerate cells which are replaced by scar tissue, increased pressure is necessary for forcing blood through the liver. This leads to disastrous conditions such as profuse bleeding, jaundice and swelling of the abdomen and later the legs.

The authors present an analysis of 3,637 postmortem examinations made between 1942 and 1946. In this group, 142 cases of portal cirrhosis were found. It was possible to obtain an accurate history concerning the use of alcohol in 64 of the 142 cases. Fifty were alcoholics and 14 claimed total abstinence. In the remaining 78 cases there was either no record of indulgence in alcohol, or the history concerning its use was questionable.

"It is significant that in younger persons with cirrhosis,

(Continued on Page 60)

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E., E., N., & T. Mo., 26:27, 1947.
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J. A. Ph., A., (Sc. Ed.) 35:304, 1946.

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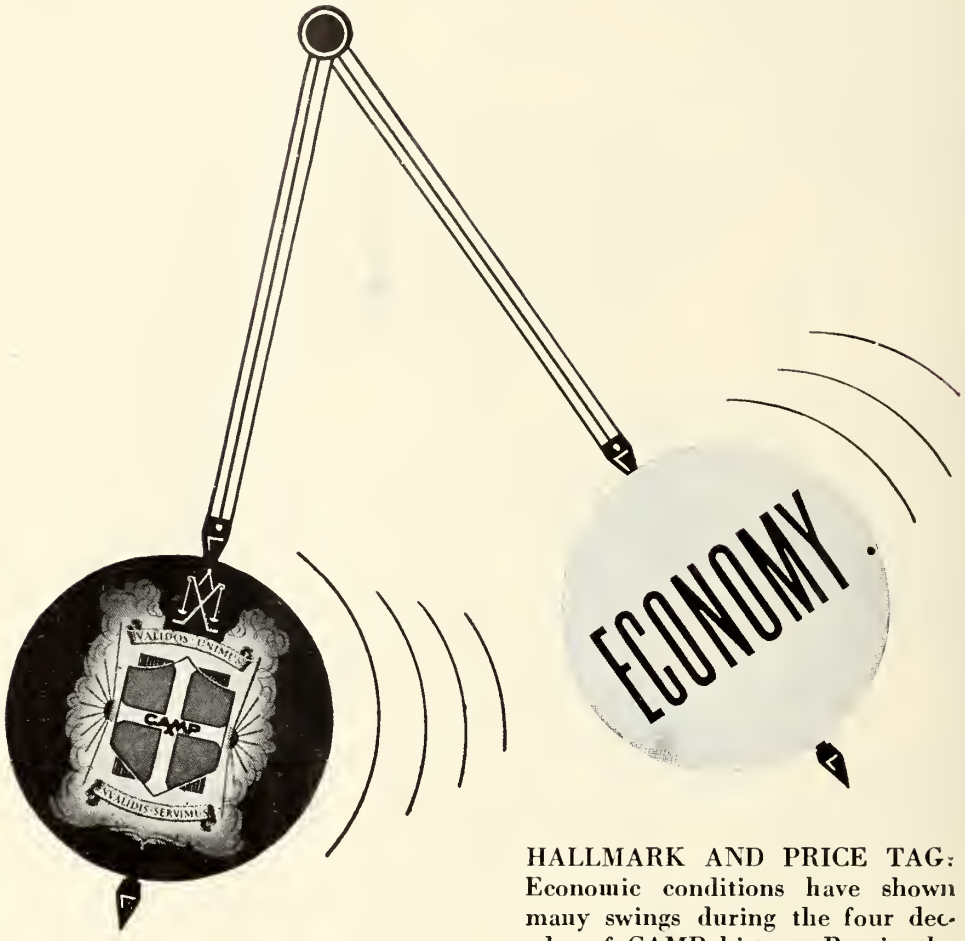
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CIRRHOSIS OF LIVER NOT SYNONYMOUS WITH ALCOHOLISM, DOCTOR SAYS

(Continued from Page 55)

namely those under 40 years of age, nine of 13 admitted heavy drinking," the authors point out.

Alcoholism is thought to contribute to the production of cirrhosis of the liver because it is believed that the alcoholic never eats enough and therefore does not get the essential substances, or if he does take food he does not digest and absorb the needed factors.

On the other hand, the authors cite the theories of other investigators who believe that cirrhosis of the liver may be caused by: intestinal bacteria following intestinal irritation from alcohol, acid fermentation or some other agent; allergic reaction resulting in shock, the result of repeated injection of egg white or other protein and bacterial infections combined with poisons that are toxic to the liver.

ALLERGY TO PENICILLIN, ANTITOXIN CONTROLLED BY BENADRYL

Two groups of investigators report the beneficial action of Benadryl in patients who developed allergic reactions to penicillin or antitoxin serum treatment, in the April 26 issue of *The Journal of the American Medical Association.*

Benadryl inhibits the action of histamine, a poison released by the tissues in allergic reactions.

Fifteen of 824 patients who reacted with hives to penicillin were treated with the antihistamine drug by Donald M. Pillsbury, M.D., Director of the Department of Dermatology and Syphilology, Institute for the Study of Venereal Disease of the University of Pennsylvania, Howard P. Steiger, M.D., P. A. Surgeon (R), U. S. Public Health Service, and Thomas E. Gibson, M.D., all of Philadelphia.

(Continued on Page 62)





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American Journal of Medical Sciences, 199, 802-810, June, 1940.

Conditioned Reflex Therapy of Alcoholic Addiction: An Evaluation of Present Results in the Light of Previous Experiences With This Method
Quarterly Journal of Studies on Alcohol, Vol. I, No. 3, pp. 501-516, December, 1940.

Conditioned Reflex Therapy of Chronic Alcoholism:
A Preliminary Report on the Value of Reinforcement
Quarterly Journal of Studies on Alcohol, Vol. II, No. 3, December, 1941.

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Diseases of the Nervous System, Vol. III, No. 8, August, 1942.

A Review of Six Years' Experience With This Treatment of 1526 Patients
Journal of the American Medical Association, Vol. 120, pp. 269 and 270, September 26, 1942.

Aversion Treatment of Alcohol Addiction
Quarterly Journal of Studies on Alcohol, Vol. 5, No. 2, pp. 216-228, September, 1944.

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ALLERGY TO PENICILLIN, ANTITOXIN CONTROLLED BY BENADRYL

(Continued from Page 60)

The doctors point out that hives and other allergic reactions to penicillin may constitute a serious bar to treatment with this drug. However, with the addition of a drug such as Benadryl and more recently Pyribenzamine, administered simultaneously with penicillin, it may be possible to continue treatment in these patients.

In conclusion they state: "Our experience indicates that (1) penicillin reactions are more frequently encountered in patients who have had repeated courses of this drug; (2) some patients who have had an urticarial [in the nature of hives] reaction to penicillin may tolerate further penicillin treatment, while others may not; (3) skin tests with penicillin are unreliable as a means of predicting the occurrence of reactions to penicillin or further administration of the compound; (4) antihistamine compounds, particularly Benadryl, are useful in controlling penicillin urticaria, and (5) urticarial reactions may at times be persistent and severe."

Another group of investigators—J. Cyril Peterson, M.D., and Lindsay K. Bishop, M.D., from the Department of Pediatrics, Vanderbilt University School of Medicine, Nashville, Tenn.—treated 10 patients with Benadryl who developed serum sickness following the administration of antitoxin for such conditions as meningitis, diphtheria and influenza.

The serum reaction consisted of a rash, vomiting or fever. The doctors state that "in every instance 100 milligrams of the drug [Benadryl] completely abolished all manifestations of the serum sickness within a period of two to three hours."



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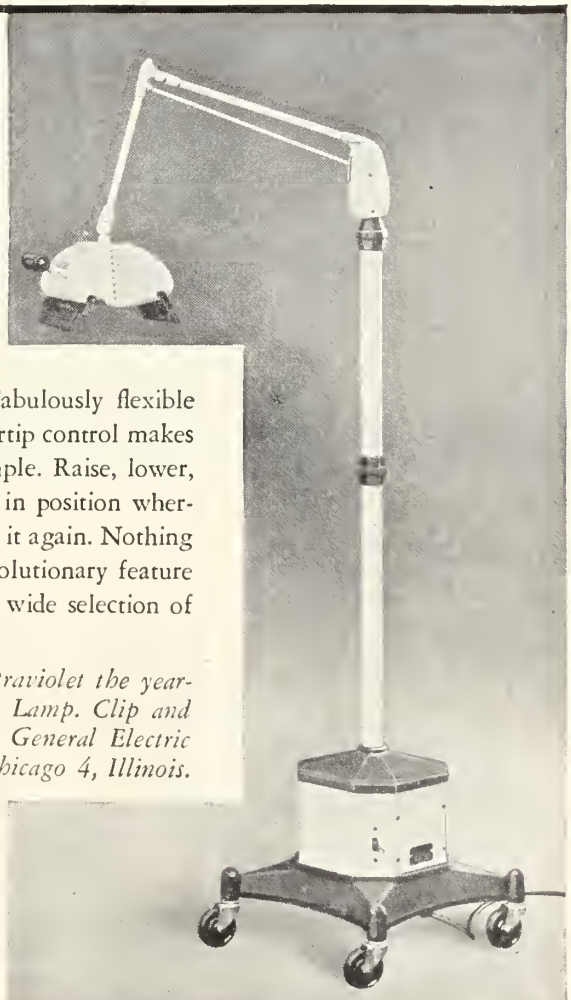
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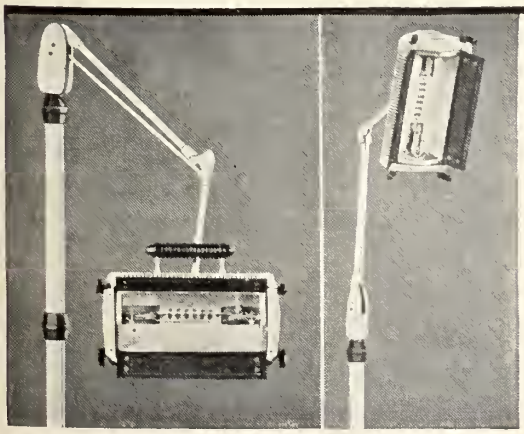


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INDIVIDUALIZED TREATMENT NEEDED FOR THYROID PATIENTS TO AVERT CRISIS

Patients with a serious and sometimes fatal condition resulting from overactivity of the thyroid gland, called "thyroid storm" by four Boston doctors, should receive individualized treatment directed toward the correction of all recognizable abnormalities.

Writing in the July 5 issue of *The Journal of the American Medical Association*, Drs. Janet W. McArthur, Rulon W. Rawson, J. H. Means and Oliver Cope, from the Thyroid Clinic, Massachusetts General Hospital, state that of a total 2,033 patients with a poisonous thyroid admitted to the wards of the Massachusetts General Hospital in the past 25 years, 36 had experienced a "thyroid storm."

"Our conception of storm," the doctors say, "is essentially that it represents the inability of the patient any longer to adjust to the strain imposed by the hyperthyroidism [overactivity of the thyroid gland]."

Sixteen of 25 patients who experienced a thyroid storm following surgery died and eight of 11 patients having thyroid storm following medical treatment died.

The most common complication in these 36 patients was heart disease which was noted in 23 patients. "That these complications exerted a significant, often decisive, influence on the survival of the patients is clear," state the authors, for of the 12 survivors, whose average age was 43, five had complicating diseases, whereas among the 24 deaths, average age 49, 19 had complicating diseases.

(Continued on Page 66)

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INDIVIDUALIZED TREATMENT NEEDED FOR THYROID PATIENTS TO AVERT CRISIS

(Continued from Page 64)

In the majority of patients the physicians were able to determine a precipitating factor which provoked the crisis; in the medical storms the commonest cause was the withdrawal of iodine and in the surgical storms, the crisis usually followed the removal of the thyroid.

In conclusion the authors point out that since thyroid crisis occurs in patients with severe, poisonous thyroids who are undernourished and suffer from serious complicating diseases and in whom medical treatment has been unsatisfactory, the occurrence of crisis can be reduced by not operating on such patients until normal thyroid function has been restored in the patient with antithyroid drugs such as thiouracil.

DR. ANDERSON ASSUMES DUTIES AS HEAD OF MEDICAL EDUCATION COUNCIL

Donald G. Anderson, M.D., former dean of the Boston University School of Medicine, has taken up his new duties as Secretary of the Council on Medical Education and Hospitals of the American Medical Association. He succeeds Victor Johnson, M.D., who recently was appointed director of the Mayo Foundation for Medical Education, at Rochester, Minn.

Dr. Anderson is a graduate of Harvard College and received his M.D. degree from Columbia. He has had hospital and academic appointments at Boston City Hospital, Presbyterian Hospital in New York, Evans Memorial and Massachusetts Memorial Hospitals in Boston, and Columbia. During the war he was associated with Dr. Chester Keefer in penicillin research for the Office of Scientific Research and Development.

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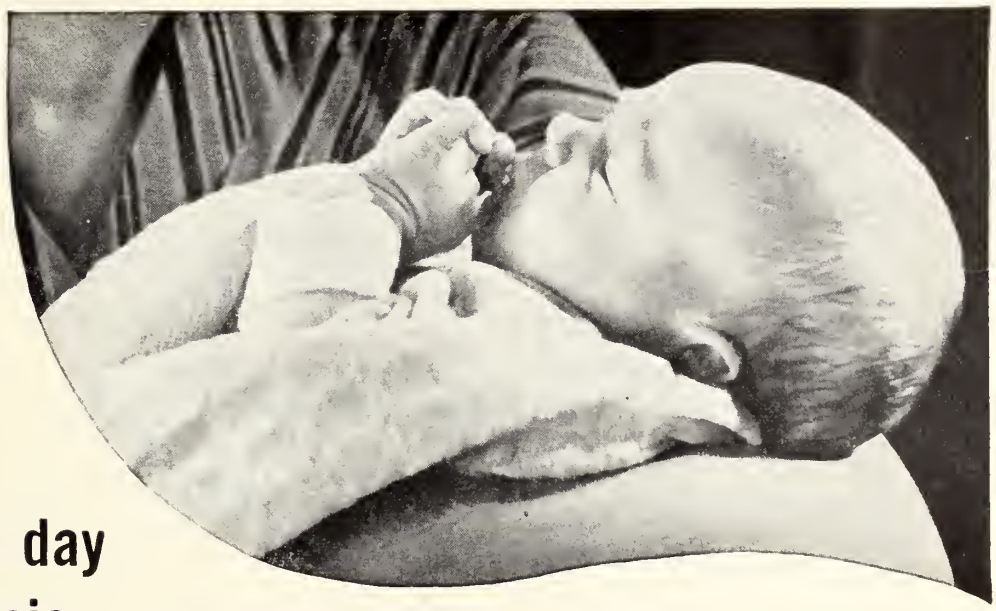
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*Vital Statistics—Special Reports: Vol. 25, No. 12, National Office of Vital Statistics, Washington, D. C. (Oct. 15) 1946, p. 206.

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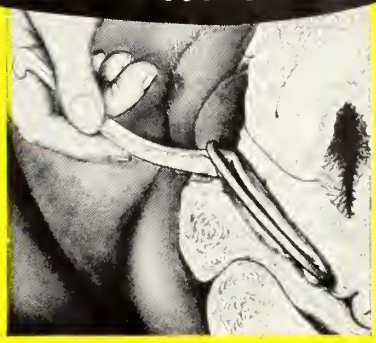
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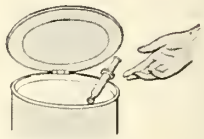
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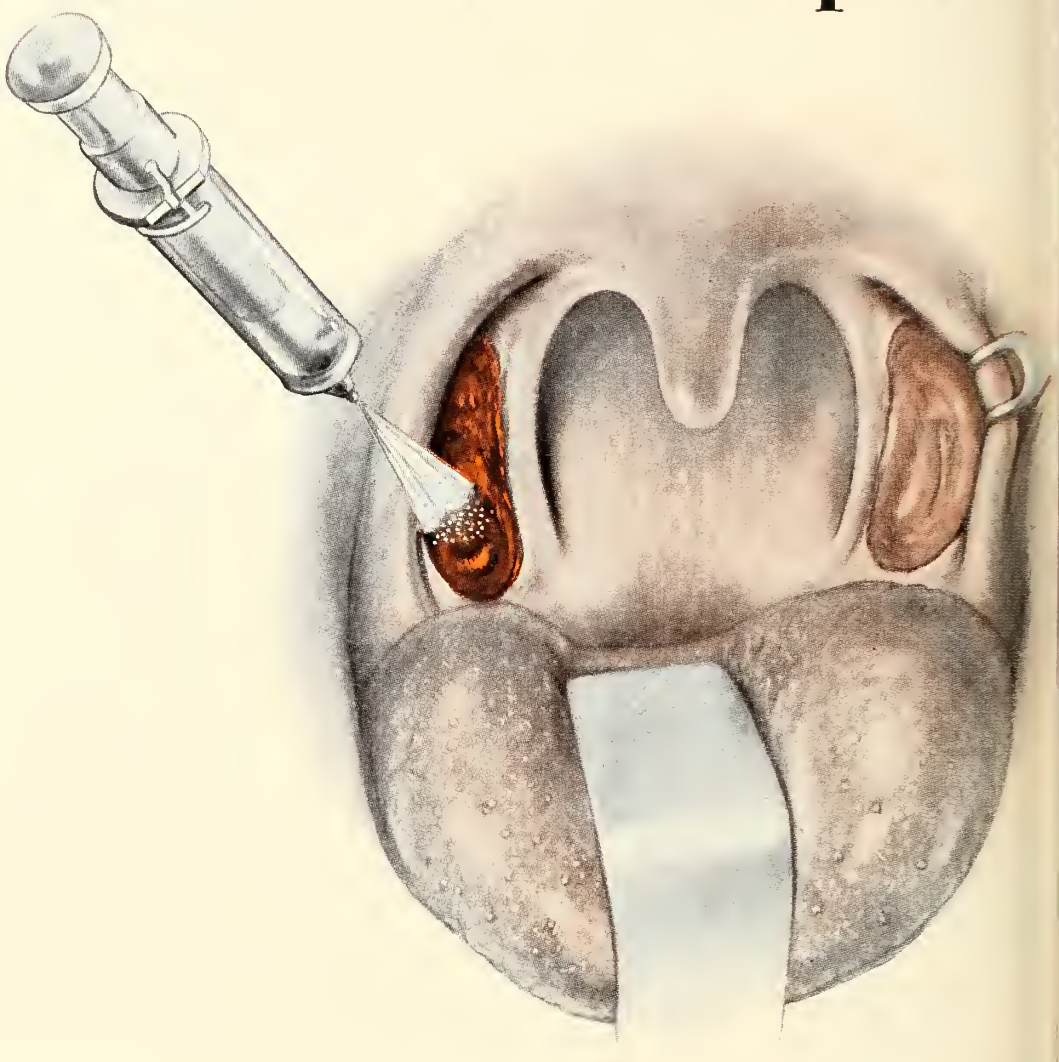
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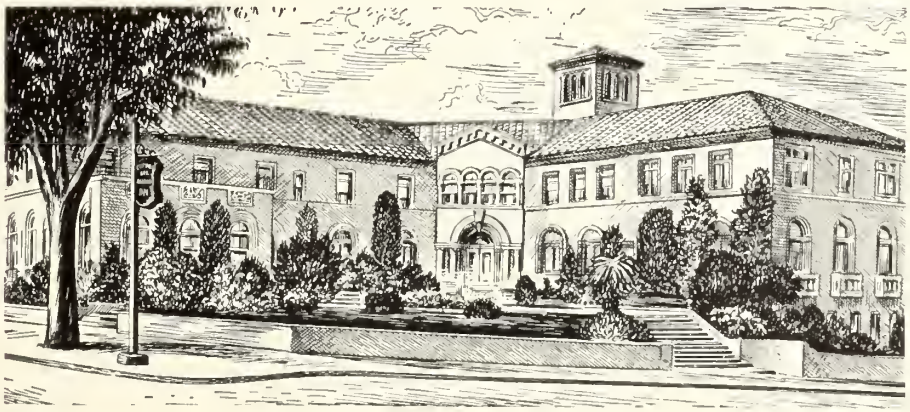
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YOUNG SURGEON, Diplomate of American Board; B.A. degree, western university, M.B., M.D. Northwestern University; year's rotating internship one of California's leading hospitals; three-year residency in general and orthopedic surgery, teaching hospital; year's fellowship in surgery; California license; will consider part-time appointment; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

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(Continued on Page 10)



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HIVES SUFFERERS GAIN RELIEF FROM ITCHING WITH BENADRYL

Benadryl, a drug which inhibits the action of histamine, a poison released by the tissues in allergic reactions, is highly effective in the treatment of certain diseases of the skin such as hives, according to two Rochester, Minn., physicians.

Writing in the July 19 issue of *The Journal of the American Medical Association*, the physicians—Paul A. O'Leary and Eugene M. Faber from the section on dermatology and syphilology, Mayo Clinic—prescribed Benadryl to be taken by mouth every three to four hours for 35 patients who had acute hives. Twenty of the patients were completely relieved in from one to two days; the condition of 12 was improved and three patients were not benefited.

The authors state that when Benadryl is administered, relief from the intense itching usually occurs in 20 to 60 minutes, with reduction of the swelling in from two to six hours. However, relief is obtained only while the drug is being used.

Another group of 75 patients with chronic hives, which may last for many years, were treated with the drug with the following results: 48 were entirely relieved while they were taking Benadryl, 17 were partially relieved and 10 obtained no benefit.

There have been a great number and variety of treatments tried but no single one has been of consistent benefit to patients who have hives chronically. The physicians therefore feel that Benadryl has given striking relief to most of these patients who may be wholly or partially incapacitated because of intense itching, insomnia and disfigurement.

Another 76 patients with miscellaneous skin diseases were

(Continued on Page 16)

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Hemoglobin (grams per 100 cc.)	17.6	17.0	11.5	12.2	14.1
White Cells per cu. mm. (thousands)	15.0	11.0	9.2	9.0	8.0
Platelets per cu. mm. (thousands)	350.0	300.0	250.0	250.0	250.0

DIFFERENTIAL SMEARS

Percentages

Polymorphonuclear Neutraphils	45	36	40	40	60
Eosinophils and Basophils	3	3	3	2	2
Lymphocytes	30	53	51	53	30
Monocytes	12	8	6	5	8
Immature White Cells	10	—	—	—	—

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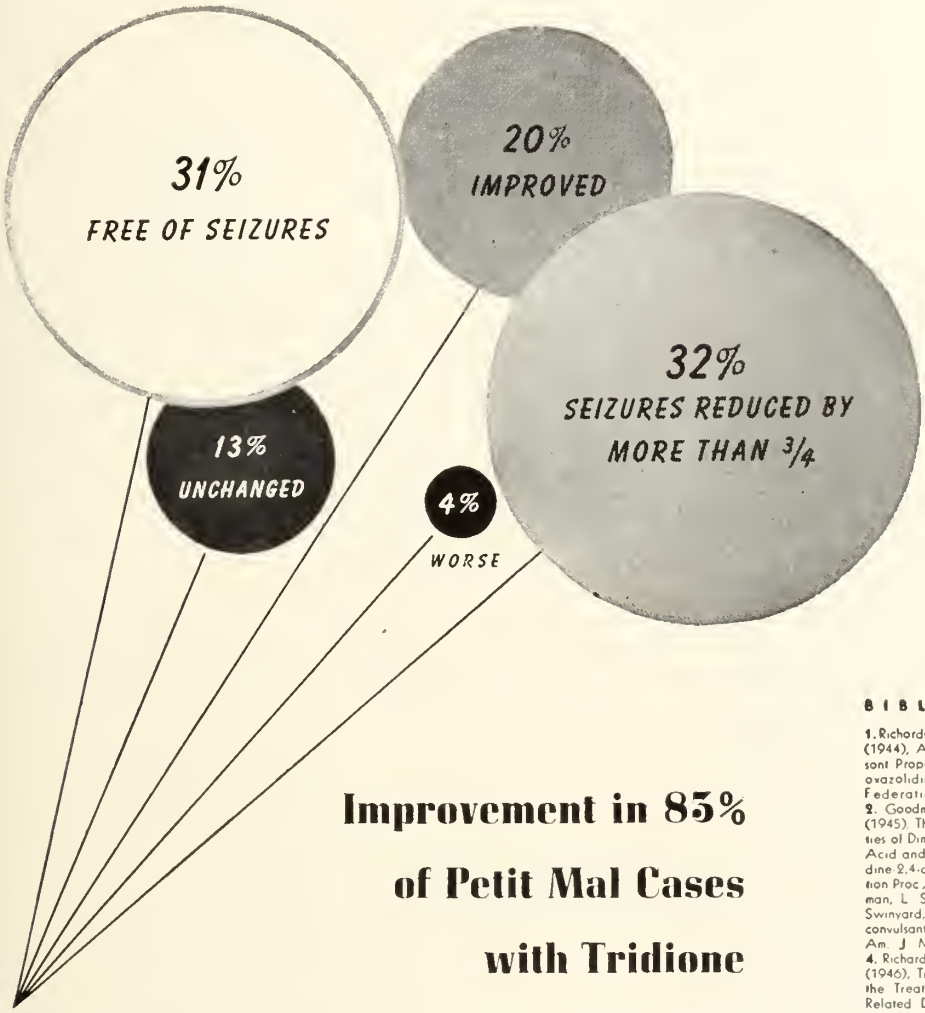
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BIBLIOGRAPHY

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The Treatment of Alcoholism by Establishing a Conditioned Reflex
American Journal of Medical Sciences, 199, 802-810, June, 1940.

Conditioned Reflex Therapy of Alcoholic Addiction: An Evaluation of Present Results in the Light of Previous Experiences With This Method
Quarterly Journal of Studies on Alcohol, Vol. I, No. 3, pp. 501-516, December, 1940.

Conditioned Reflex Therapy of Chronic Alcoholism:
A Preliminary Report on the Value of Reinforcement
Quarterly Journal of Studies on Alcohol, Vol. II, No. 3, December, 1941.

Technic
Diseases of the Nervous System, Vol. III, No. 8, August, 1942.

A Review of Six Years' Experience With This Treatment of 1526 Patients
Journal of the American Medical Association, Vol. 120, pp. 269 and 270, September 26, 1942.

Aversion Treatment of Alcohol Addiction
Quarterly Journal of Studies on Alcohol, Vol. 5, No. 2, pp. 216-228, September, 1944.

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HIVES SUFFERERS GAIN RELIEF FROM ITCHING WITH BENADRYL

(Continued from Page 12)

treated with Benadryl but few experienced the relief of the hives sufferers.

"Side reactions occurred among 31 per cent of the patients in this study," according to the physicians, "but were severe enough to warrant discontinuance of the administration of Benadryl to only 10 patients."

The side reactions in order of frequency were drowsiness, dizziness, weakness and dryness of the mouth. Some patients complained of being "jittery," "on edge," "nervous," "confused," "poorly coordinated," "nauseated" and "excited."

"Side reactions usually occur during the first few days after the administration of the drug is begun and frequently diminish in severity or disappear entirely after several weeks of treatment," state the authors.

NEW TIME SET FOR DR. GRAHAM PROGRAM

A new time of presentation has been announced by the Bureau of Health Education for the American Medical Association-Mutual Broadcasting System weekly radio dramatization, "Stephen Graham, Family Doctor." This program, just extended to November 17, will be aired each Sunday afternoon at 2 o'clock, Eastern Standard Time.

The program portrays the family doctor as he lives and practices in a fictitious but typical average middle size American city set in the midst of an imaginary rural area.



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*Feinberg, S. M.: J.A.M.A., 132: 702 (Nov. 23) 1946.

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POLIOMYELITIS CAN BE DIAGNOSED WITHIN 24 HOURS OF ONSET

Diagnosis of infantile paralysis can usually be made within 24 hours of the onset of the disease, according to John F. Pohl, M.D., of Minneapolis, and treatment should begin immediately in order to relieve the discomfort of patients and to minimize crippling.

Writing in the July 26 issue of *The Journal of the American Medical Association*, Dr. Pohl, who is from the Elizabeth Kenny Institute, states that "an analysis of 1,125 cases of poliomyelitis treated in Minneapolis during the 1946 epidemic reveals that the symptoms and observations are sufficiently characteristic to enable the diagnosis to be established in most patients within 24 hours of the onset. The study also discloses that paralsyis is not a useful diagnostic sign because paralysis or weakness of the muscles is not a common early event and in a considerable number of cases does not occur at all. To await the appearance of paralysis to confirm the diagnosis or to begin treatment is inadvisable."

Of the 1,125 cases, 736 or 65.4 per cent progressed to paralysis of some degree within 15 days of onset but 389 or 34.6 per cent did not show paralysis at any time. Sixty-eight patients or six per cent died.

Symptoms of the first 24 hours are: headache, fever, nausea, vomiting, loss of appetite, stiff neck, stiff back, painful arms and legs and general malaise with listlessness.

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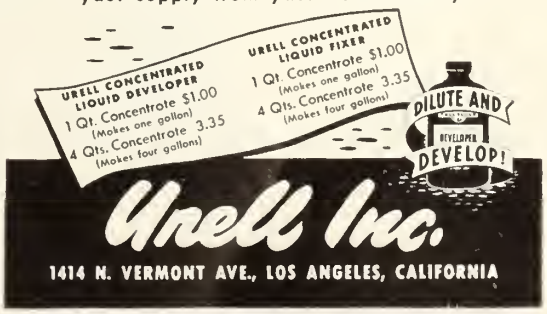
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*J. A. M. A. 129:1030. December 15, 1945.

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INCREASE SCOPE OF OPERATIONS WITH FEWER SURGICAL DANGERS

The dangers of surgery have diminished as the variety and magnitude of operations have increased, according to Robert H. Kennedy, M.D., of New York, writing in *Hygeia*, health magazine of the American Medical Association.

Dr. Kennedy, who is surgical director of the Beekman-Downtown Hospital and attending surgeon in charge of the tumor division of the New York Post-Graduate Hospital, states that "in an emergency operation a person is no longer put on the operating table until after fluid has been given him if he is dry, nourishment if he is starved, blood if he is anemic, germ-fighting medicines called antibiotics, such as penicillin, if he is infected. All of these can be injected into veins if the stomach does not tolerate food. Before the surgeon will operate careful survey must show that the patient is in the best possible condition considering the emergency."

Great strides have been made in the field of anesthesia. There are now a large number of methods of anesthesia and drugs for the specially trained anesthetist to choose from, each having a place according to special indications—local and spinal anesthesia with which the patient need not be put to sleep; intravenous anesthesia, which does not require breathing anything into the lungs, inhalation anesthesia with a finely geared machine which delivers exact proportions of several different gases. Most of these are accompanied by breathing in oxygen to maintain body functions and keep all tissues in good condition.

The author points out that "modern surgery is only about 60 years old. This period represents almost all the advances in surgical knowledge. With each decade it is thought that all surgical discoveries have been made but new ideas always

(Continued on Page 22)



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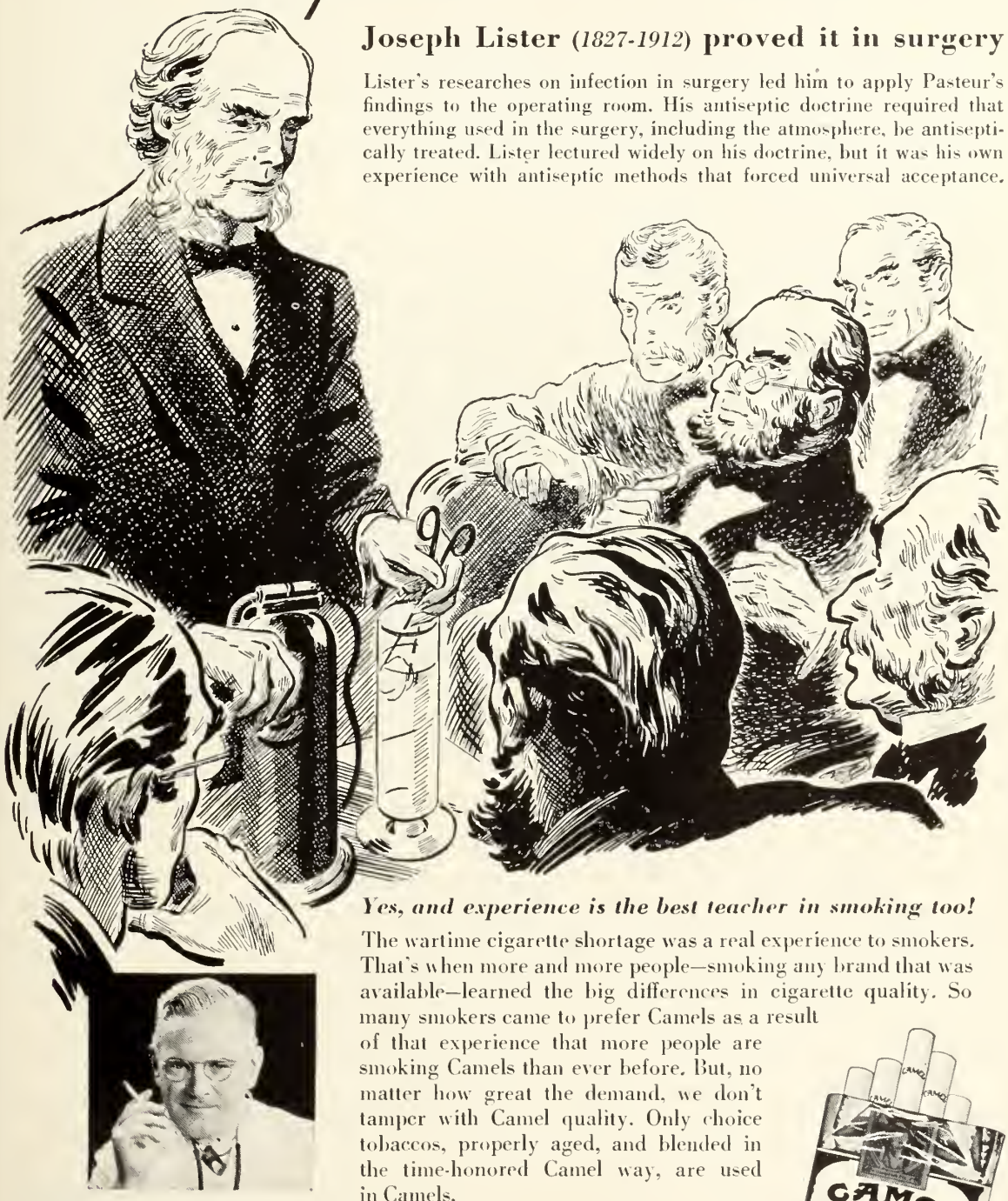


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INCREASE SCOPE OF OPERATIONS WITH FEWER SURGICAL DANGERS

(Continued from Page 20)

come forth opening up new fields for doing good. . . . During almost every year it is found that some condition is amenable to an operation previously unknown. Many persons formerly condemned to death, or to a life of permanent disability or discomfort, can now be returned to normal life. There is practically no area left in the body which cannot be approached surgically with safety."

For example, tracts in the brain can be cut to improve greatly the condition of some persons previously confined in insane asylums. Defects in the skull resulting from accidents can be filled in completely and permanently with a metal or plastic that the tissues tolerate well. A new drug, thiouracil, has made operations for goiter much safer and resulted in less reaction.

Today a lobe or a whole lung can be removed. Abnormalities of the major blood vessels within the chest can be sidetracked. An operation which requires cutting the nerve supply to the stomach is effective for stomach ulcers. Disease of the liver resulting in shutting off of its necessary circulation is being relieved by shunting the circulation to other vessels through metal tubes. A damaged pancreas, an organ lying behind the stomach, can be removed in whole or in part since laboratory experiments have found substitute products for the secretions of the organ.

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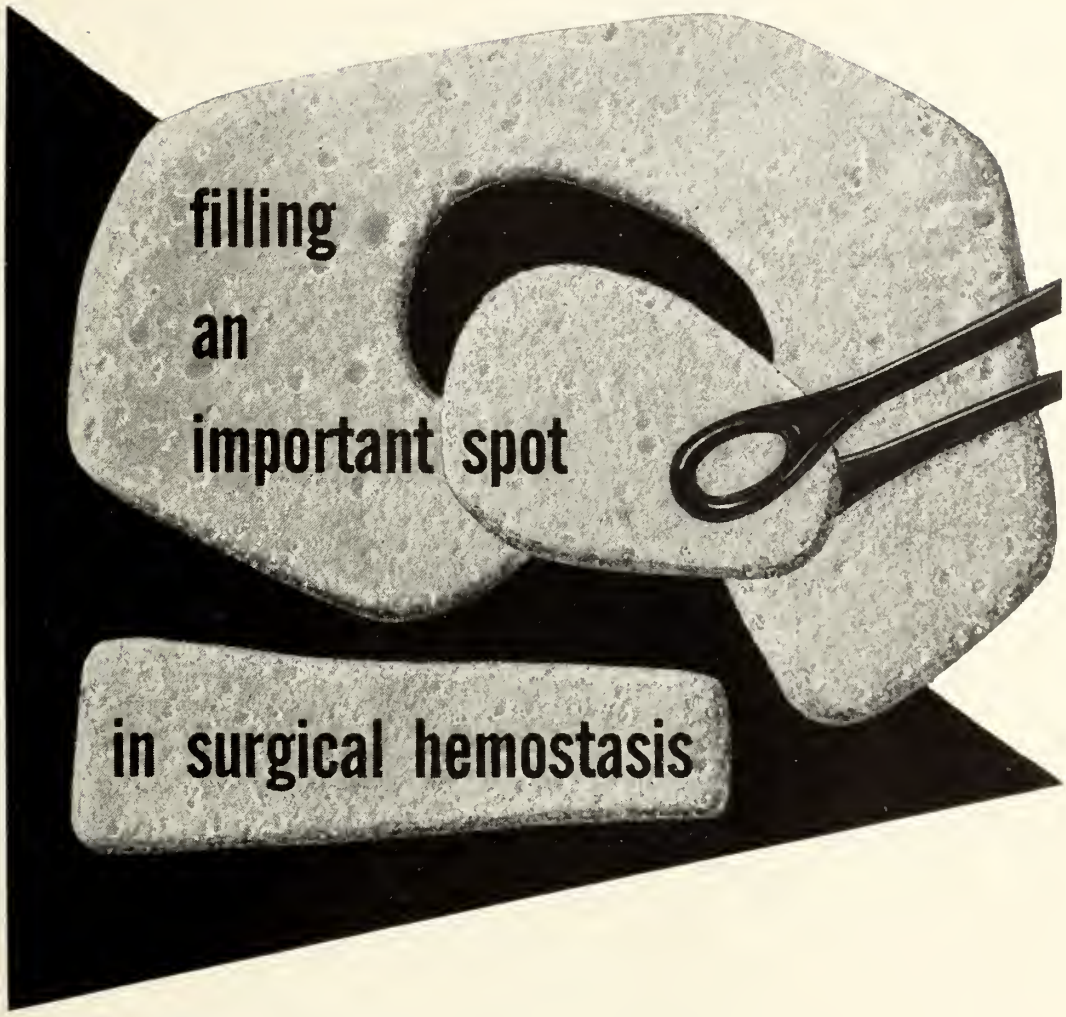
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1. Barnes, J.: Brit. M. J., *1*:79 (Jan.) 1944.
2. Sikkema, S. H. and Sevringhaus, E. L.: Am. J. Med., *2*:251 (March) 1947.
3. Finkler, R. S. and Becker, S.: J. A. M. W. A., *1*:152 (Aug.) 1946.
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5. Rakoff, A. E., et al: Clinical Evaluation of Dienestrol, A Synthetic Estrogen, Presented at Meeting of Assn. for Study of Int. Secretions, Atlantic City, N. J., June 6-7, 1947.
6. Gordon, E. S.: Value of Dienestrol in the Menopausal Syndrome (Tentative Title) to be published.

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POINT OUT AIDS FOR DIAGNOSING ANEMIAS IN INFANTS, CHILDREN

The anemias of infancy and childhood do not differ greatly from those of the adult but diagnosis is often difficult because of the normal blood changes which take place from birth through childhood, according to four doctors presenting individual reports in the July 19 issue of *The Journal of the American Medical Association.*

Carl H. Smith, M.D., from the New York Hospital and the Department of Pediatrics, Cornell University Medical College, New York, points to certain pertinent information which will aid diagnosis, such as the onset of pallor, the appearance of black and blue spots, the loss of blood from the bowel, infection, including exposure to animal parasites, the use of drugs such as the sulfonamides known to affect blood formation, kidney disease, the rapidity of growth, overfeeding of milk with the refusal of solid foods, and the existence of anemia in the mother during pregnancy.

Information in regard to race and nationality is important in the diagnosis of sickle cell anemia, a peculiar red cell deformity, and Mediterranean anemia, says Dr. Smith. Although sickle cell anemia is predominantly a disease of Negroes, it has been observed occasionally in the white families which are principally of Mediterranean origin.

"In Mediterranean anemia," writes the physician, "the patients are mainly of Greek, of Italian (principally Sicilian and from the Italian peninsula below Naples) or, less frequently, of Syrian origin. . . . On the basis of previous studies and of an investigation now in progress the evidence is conclusive that in every family with a child severely affected with Mediterranean anemia and requiring periodic trans-

(Continued on Page 28)

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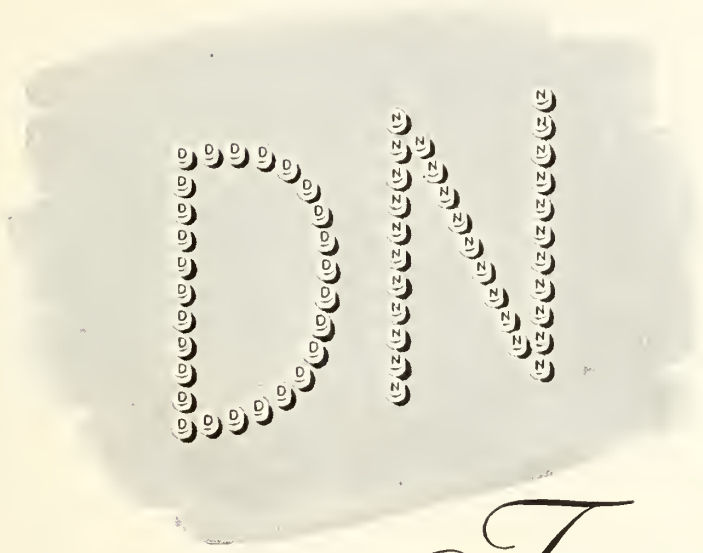
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POINT OUT AIDS FOR DIAGNOSING ANEMIAS IN INFANTS, CHILDREN

(Continued from Page 26)

fusions of blood both parents revealed evidences of the disease."

Anemia is a condition in which the blood is deficient in either quantity or quality. Wolf W. Znelzer, M.D., from the Anemia Clinic, Children's Hospital of Michigan and Departments of Pediatrics and Pathology, Wayne University College of Medicine, Detroit, points to prematurity as a cause of anemia.

Premature infants usually fail to receive the deposits of iron, building blocks of the blood cell, normally transferred during the latter part of pregnancy and therefore have an inadequate reserve to draw upon for normal growth.

The full term infant usually has an adequate reserve of iron to last until it can be replenished by iron from the diet. Dr. Zuelzer says that "if food rich in iron is not then made available, anemia will develop on a nutritional basis alone. However, a deficiency anemia due to lack of iron is not necessarily the result of inadequate dietary intake; in fact, purely nutritional anemia is relatively infrequent even in infancy. In most instances infection is a precipitating factor."

Analysis of 1,500 consecutive admissions to the Boston Floating Hospital was made by James Marvin Baty, M.D., to determine the incidence of anemia in hospital practice. Dr. Baty is from the Department of Pediatrics of the Tufts College Medical School, the Boston Floating Hospital and the Children's Clinic of the Boston Dispensary.

"It should be pointed out that the Boston Floating Hospital is largely charitable," he states, "and that most of the patients are unable to pay the costs of medical care. The hygienic and dietary background of such a group of children

(Continued on Page 30)

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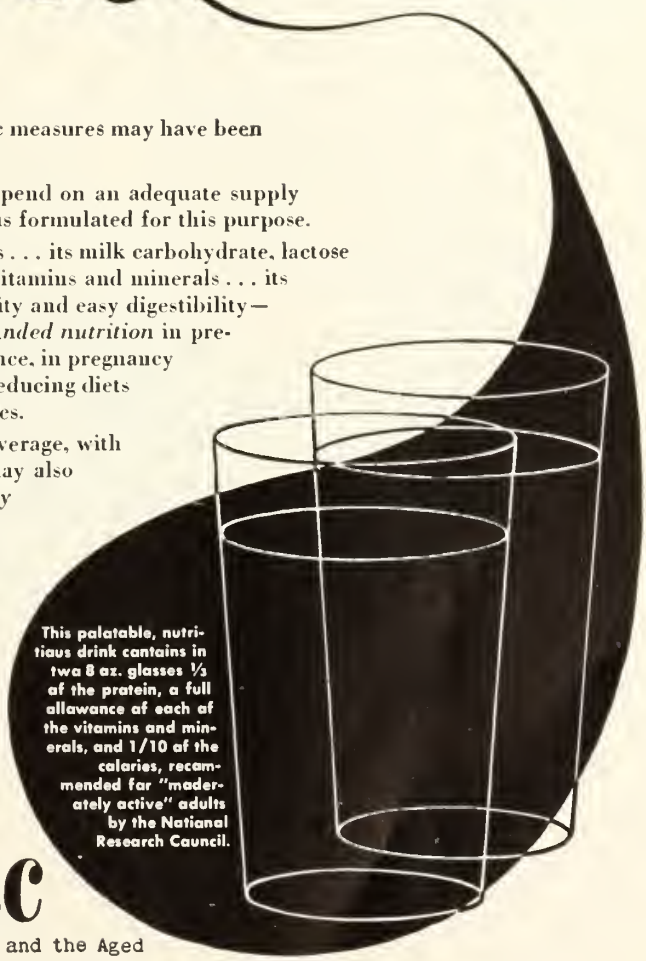
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POINT OUT AIDS FOR DIAGNOSING ANEMIAS IN INFANTS, CHILDREN

(Continued from Page 28)

is not comparable to that of patients under the care of private physicians. Furthermore, only those patients with severe anemia and those with unusual conditions received the careful consideration of the hematologist [blood specialist]."

Of these 1,500 patients, 514 or 34 per cent, showed a definite anemia. A breakdown by age groups indicates that the second year of life is the period in which there is the greatest incidence of anemia, about 51 per cent. Approximately 45 per cent of the children under two years of age and 25 per cent of those between ages two and 12 were anemic.

In 92 per cent of the 514 patients the anemia was the result of infection, dietary deficiency, prematurity or some combination of these three factors.

H. G. Poncher, M.D., Professor of Pediatrics at the University of Illinois School of Medicine, Chicago, states that anemia in infancy is predominantly due to iron deficiency but other necessary materials may also be lacking.

"Such evidence, however," states the author, "does not justify the numerous shotgun proprietary [commercially protected drugs] preparations that are constantly offered to the [medical] profession without clinical facts to support their use. Preparations of this type increase the cost of medical care and minimize the careful evaluation of the cause of the anemia which is so important to well conceived and intelligent treatment."

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Treatment should consist of removing the cause of the anemia, together with the institution of a balanced diet or if the anemia is severe, blood transfusions should be given until the cause is removed.

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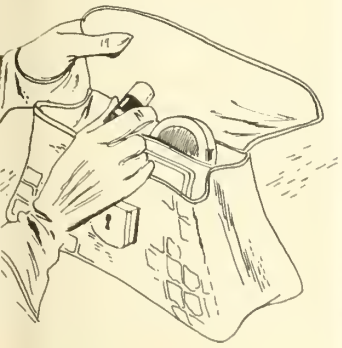
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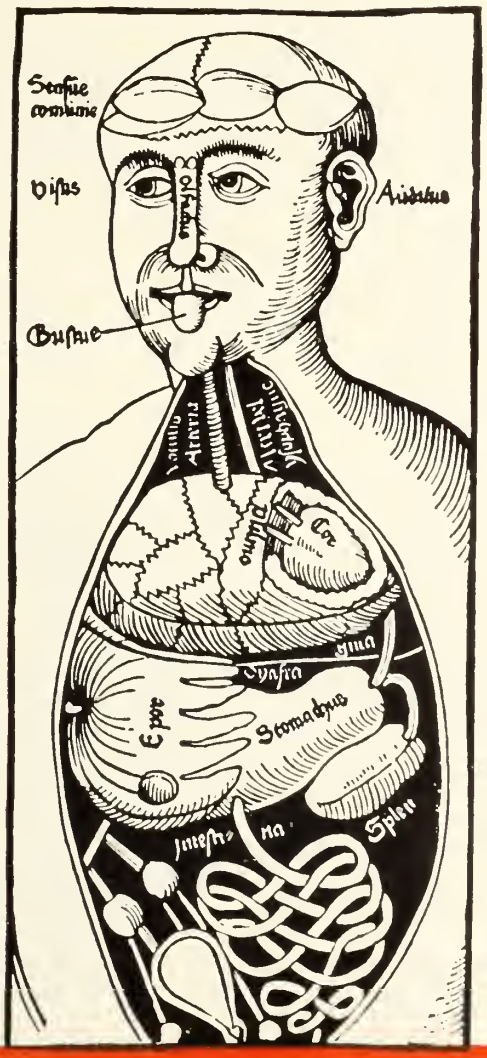
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Anatomic woodcut: Title page from Pyligk Compendium; 1516—Courtesy, The Bettmann Archive



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SOCIALIZED MEDICINE A THREAT TO QUALITY OF MEDICAL SERVICE

Dr. Ernest E. Irons, Chicago, a member of the Board of Trustees of the American Medical Association, says that "governmental regimentation of medicine would give the American people an inferior rather than a better quality of medical service."

Writing on "Medicine and Economics" in the July 19 issue of *The Journal of the American Medical Association*, Dr. Irons states that such regimentation "would be another long step toward the destruction of free enterprise and of American democracy."

Dr. Irons, who is past president of the American College of Physicians, a war-time member of the committee on drugs and medical supplies of the National Research Council and past chairman of the American Board of Internal Medicine, points out how socialized medicine would affect the quality of medical service for the American people. Dr. Irons says in part:

That socialized medicine interferes with the physician-patient relationship is self evident by the recognition of advocates of socialized medicine of the necessity of providing a panel. The most shrewd advocates of socialized medicine have failed utterly in their contention that their plan will not interfere in this fundamental confidential relation of doctor to patient. It always has and always will. Indeed, this interference is part of their plan, although the more ardent advocates will not admit it . . .

Physicians have up to now been individualists; they do their best work on a competitive basis. If the physician is alert, well trained, honest, proud of his profession and its achievements, he will strive continually to improve and give better service, and he is rewarded by the gratitude of his patients and in increase in his clientele and emoluments. To the degree that he is poorly prepared, slothful and loses his incentive to improve, he will do less creditable work. He will be limited by the deadly average of attainment, loss of initiative and dependence on a paternal government, which has always been the next step downward in socialistic governments of history. The removal of the individual incentive is fatal to progress, and human nature is the same, irrespective of occupation. Socialized medicine will reduce the quality of public service as it has in modern governments elsewhere.

Many social injustices and inequalities remain to be corrected. These become more evident as our general standard of living rises from decade to decade, but the remedying of these faults should not be made the occasion for destruction of past gains. In medicine, inadequacies in medical care are closely interlocked with general economic deficiencies. Understaffed and economically poor communities and areas require individualization of treatment, and a plan which will be efficient in one region may not work in another with a different local ideology and economy . . .

We have already seen in our own national life the ill effects of great business monopolies: the Sherman Antitrust Act was passed to prevent the stifling of competition. Monopoly of labor through unions originally designed to obtain justice and fair treatment for labor has now resulted in profit to a few of one class, to the detriment of a still larger class of labor, by denying them free opportunity to work. Monopolies whether of capital or of labor work to the benefit of their sponsors only so long as they are exceptional—when they become general they are destructive of the general welfare and ultimately destroy their creators. For this reason socialists and communists favor monopolies in business and in medicine as factors forwarding their own objectives . . .

Care of people by a paternalistic government results in loss of their sense of personal responsibility, first to participate in government, and later to make any effort to contribute to the general welfare.

In urging the theory of the right of a citizen to be cared

(Continued on Page 38)

"Man that is born of a woman is of few days, and full of trouble." Job XIV, 1



Even in the face of great advances in medical knowledge, the lives of many infants are still literally "of few days and full of trouble," for 62.1% of the total infant mortality occurs within 30 days after birth.* During this fatal first month, every precaution must be taken to ward off troubles of early infancy.

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*Vital Statistics—Special Reports: Vol. 25, No. 12, National Office of Vital Statistics, Washington, D. C. (Oct. 15) 1946, p. 206.

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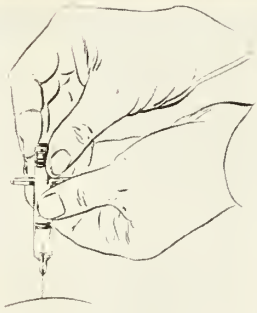
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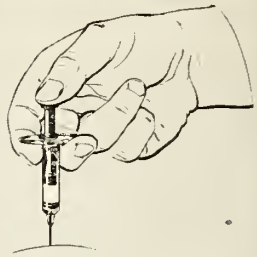
2 Diophrogm end of cortridge is then dipped in on ontiseptic solution ond cartridge is inserted into syringe barrel just to point of inner needle.



3 Needle is now inserted into muscle into which injection is to be made ond cortridge is withdrawn slightly to determine if needle end is in o vein.



4 If vein has not been entered, cortridge is forced into end of borrel lumen, cousing inner needle to pierce cartridge diophrogm and to estoblish communicotion with the oil ond wax mixture.

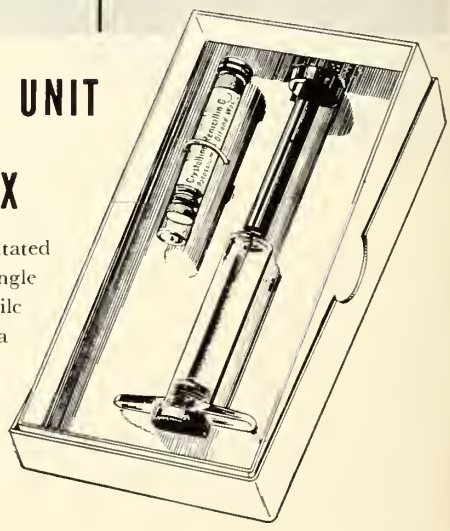


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SOCIALIZED MEDICINE A THREAT TO QUALITY OF MEDICAL SERVICE

(Continued from Page 34)

for, social workers, betrayed by their own idealism, forget that this citizen has also an obligation in a democracy himself to contribute to the general welfare. Without insistence on this obligation, democracy fails.

We are just now emerging from a period of governmental regulation and centralization under bureaucracies made necessary by total war. This period, in which we have become somewhat inured to regimentation, is especially dangerous to our democracy. Socialist and totalitarian governments grow by steps, slowly at first, but with a steadily increasing tempo and always by deluding the people into the belief that the new will be better than what they already have. Government monopoly whether in business or in medicine inevitably leads to the abuse of power and deterioration of quality of service.

TYPHOID DEATH RATE DECLINING STEADILY IN LARGE U. S. CITIES

Typhoid fever deaths in 93 large U. S. cities have shown a steady decline from 95 in 1942 to 62 in 1946, according to the 33rd annual report appearing in the July 26 issue of *The Journal of the American Medical Association.*

In the 78 cities for which data have been available since 1910, the report says, there occurred 54 deaths from typhoid in 1946, 80 in 1945, 66 in 1944 and 78 in 1943. This provides a new low with a rate of 0.15 per hundred thousand of population. The previous low was 0.18 in 1944.

Figures for the report were obtained from local health officers, who were asked to record an estimate of population.

The number of cities with no typhoid death during the past two or more years has increased from 25 in 1941 and 41 in 1945 to a new high of 49 in 1946. Fort Wayne continues to head the list with no death in 12 years. Fall River and

(Continued on Page 42)



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★ BIBLIOGRAPHY

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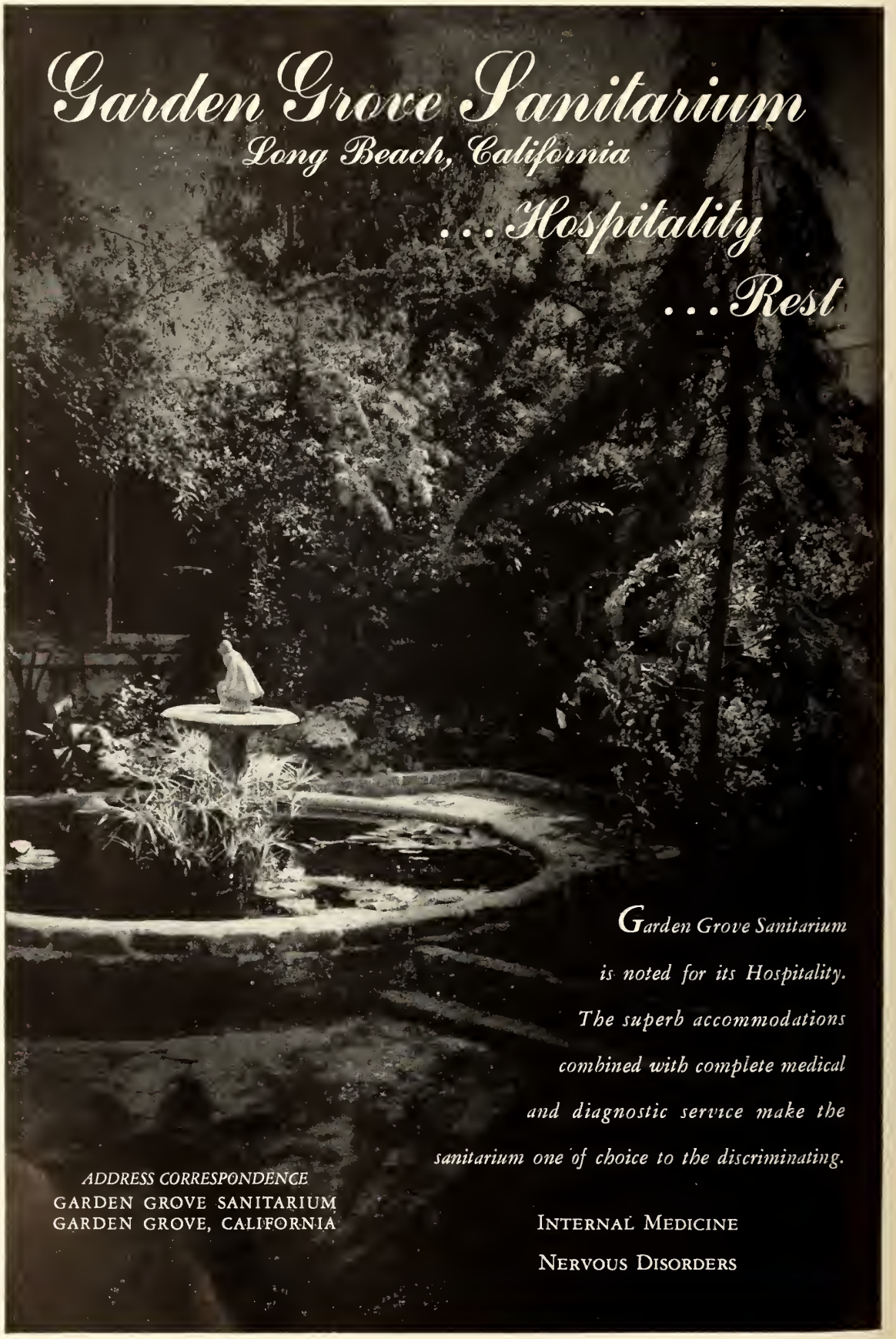
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TYPHOID DEATH RATE DECLINING STEADILY IN LARGE U. S. CITIES

(Continued from Page 38)

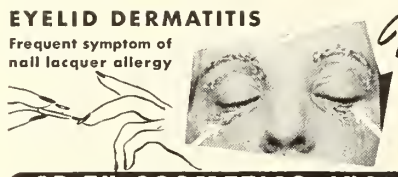
Lynn report no death in 10 years, Cambridge no death in nine years. Hartford, Springfield and Yonkers have clear records for eight years. South Bend reports no typhoid death among residents for 11 years.

The number of cities with no death from typhoid has increased from 56 in 1945 to 60 in 1946. Charlotte and Gary, not included in the group of 93 cities, also report no death. This is by far the best showing, and there remains no city with a rate of 2.0 or more. The number of cities with rates of less than 1.0 has increased by one (88 in 1946). Forty-seven cities (49 with Charlotte and Gary) record no typhoid death in 1945 and 1946.

The New England cities with a population of 2,579,152 have set a new all-time record with no death from typhoid in 1946. The East North Central cities, although reporting a new low rate (0.06), are now in second place. They were in first place in 1945 (0.07). The West North Central cities follow close behind (0.07) and nose out the Middle Atlantic cities (0.11). Only the Mountain and Pacific cities record a higher death rate for 1946 (0.31) than for 1945 (0.17).

Twelve of the large Middle Atlantic cities (there were 13 in 1945), with a population of 13,129,185, report no death from typhoid in 1946. These cities have a group rate (0.11) which is but slightly higher than that of the East North Central and West North Central cities. It is much lower than the rate for 1945 (0.23) but not as low as that for 1943 (0.08). In 1946 there were 14 deaths, 13 among resi-

(Continued on Page 46)



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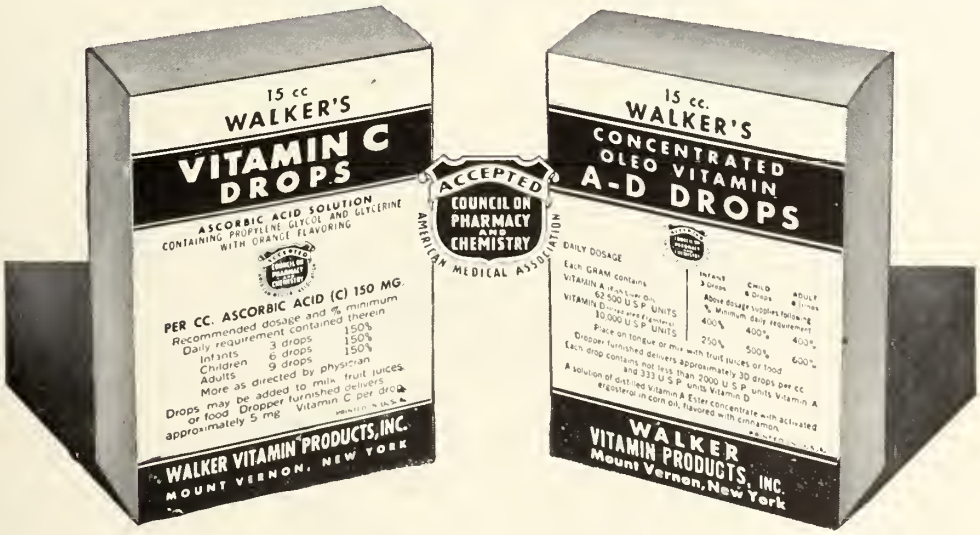
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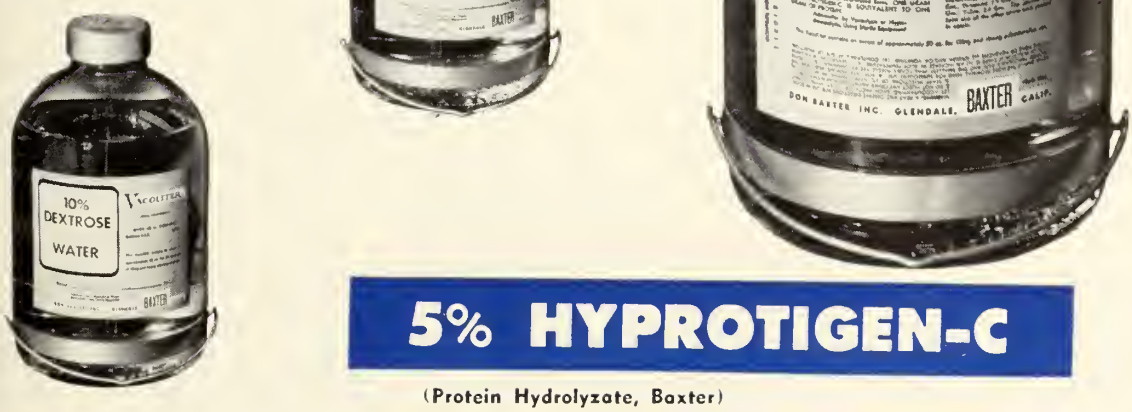
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TYPHOID DEATH RATE DECLINING STEADILY IN LARGE U. S. CITIES

(Continued from Page 12)

dents; in 1945 there were 30, 25 among residents; in 1943 there were 11, nine among residents. New York records eight deaths in 1946, all among residents (there were 11 in 1945, 13 in 1944). The low mark was reached in New York in 1943 with four deaths, three among residents. New York reports a localized outbreak with 20 cases and no deaths in August 1946; the outbreak was attributed to fresh vegetables contaminated by sewage backed up out of a toilet bowl in an apartment immediately over the vegetable store.

The rate (0.44) for the South Atlantic cities (population 2,727,985) is twice the low rate for 1944 (0.22) but is significantly lower than the rate for 1945 (0.62). In these cities there occurred 12 deaths in 1946, 17 in 1945, six in 1944.

The East North Central cities (population 9,386,378) have lost first place, which rank they held in 1945 and back in 1941 and 1938. Fourteen (13 exclusive of Gary) of the cities in this group report no death from typhoid in 1946. The number of typhoid deaths decreased from seven in 1945 (33 in 1940, 13 in 1944) to six in 1946, a new low.

The six cities in the East South Central group (population 1,286,747) show a decrease in the death rate (0.54 in 1946, 0.70 in 1945). However, a lower death rate (0.31) was recorded in 1944 and the same rate in 1942 (0.54). This group has the highest group rate for 1946, a position which it also held in 1945, the South Atlantic cities being next (0.44).

The West North Central cities (population 2,716,484) show a decrease in the number of deaths from three to two. The death rate declined from 0.11 in 1945 (it was the same in 1943 and 1944) to 0.07 in 1946.

(Continued on Page 48)

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TYPHOID DEATH RATE DECLINING STEADILY IN LARGE U. S. CITIES

(Continued from Page 46)

The eight cities of the West South Central group (population 2,048,692) report a continued reduction in the death rate (2.00 in 1940, 0.83 in 1943, 0.59 in 1945, 0.39 in 1946). The actual number of deaths decreased from 12 in 1945 (41 in 1940) to eight in 1946, the lowest on record. Noteworthy is the reduction in the death rate of the cities of this group from 5.36 for the five-year period, 1931 to 1935, to a new low of 0.39 in 1946.

The 11 cities (excluding Sacramento) in the Mountain and Pacific states (population 4,186,039) report an increase from seven in 1945 to 13 in 1946 (there were but five deaths in 1944). The rate has increased from 0.17 to 0.31. (It was 0.12 in 1944.) This is the only group of cities which records more deaths from typhoid in 1946 than in 1945.

In conclusion, the report states that "for 1946 the health officers report only a few localized outbreaks of typhoid. Improvement has been general throughout the country, and typhoid as a cause of death in these cities is fast approaching the vanishing point. The war years do not appear to have contributed materially to the typhoid problem in the large cities."

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DANNENBERG (Permanente Foundation Med. Bull., July, 1946), "We found dihydroergotamine tartrate was completely free from toxic or side-reactions in the series of patients treated."

FRIEDMAN and FRIEDMAN (Ohio State Med. J., Dec., 1945), "In favorable cases, dramatic relief from the migraine symptoms can be obtained within 20 to 30 minutes following intramuscular administration of 1.0 mg. of D.H.E.45."

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"MODERATE DRINKING" IMPLIES TAKING TWO COCKTAILS A DAY

A moderate drinker takes two cocktails or highballs a day, states a medical consultant in answer to a query in the July 12 issue of *The Journal of the American Medical Association.*

His reply says that "for the average, so-called healthy adult, on a good diet, two cocktails or highballs a day would, by most informed people, be considered 'taking alcohol in moderation,' particularly if not taken on an empty stomach before the morning breakfast, and if taken shortly before, during or shortly after the evening meal. But taken under identical conditions and rate, this quantity of alcohol would produce much higher blood alcohol in a person weighing 100 pounds than in a person weighing 200 pounds. The late Dr. Raymond Pearl of Johns Hopkins Medical School reported that moderate drinkers live as long as do total abstainers. On the other hand, heavy or so-called excessive drinkers shorten their life span, evidently through the action of alcohol. As regards the immediate and temporary action of alcohol (the degree of inebriety) there are considerable individual variations in tolerance. But it is not yet known whether persons having low tolerance suffer chronic injury more readily. All that can be said at present is that to the average normal adult possible chronic injuries from the amounts of alcohol mentioned have not yet been proved or clearly separated from hereditary factors in the organ potentials, from the inevitable effects of disease, from accidents, from the strain of living and from the aging processes."

Another *Journal* consultant, reviewing the effects of the moderate use of alcohol, states: "One of the best sources of data concerning the effects of the moderate use of alcohol is that offered by the statistical studies made in the Medico-Actuarial Mortality Investigation, carried out by a Joint Committee of the Actuarial Society of America and the Association of Life Insurance Directors. The published reports in 1914 and again in 1929 consisted of a study of over 2,000,000 policies. In this investigation the term 'moderate drinker' was applied to persons who took an average of two glasses of beer or one glass of whisky or their equivalent daily. Of this group the better class of risks, those who were accepted at the standard rates of premium, indicated a mortality of 15 per cent higher than the average of all insured lives treated as standard risks, i.e. a relative mortality of 115 per cent. It is pointed out however that, while the habits were recorded at the time of application, the higher mortality than usual may be due largely to a proportion of the applicants becoming immoderate drinkers at a later date. The death rate in this group was higher than the normal from cirrhosis of the liver, cerebral hemorrhage and pneumonia.

"By comparison, whereas some members of the 'moderate drinker' group were allowed policies at the normal rate of premium, another group, which consisted of those who drank to excess not oftener than three times a year but whose bouts lasted two or three days at a time, were considered as distinctly hazardous risks, with a relative mortality of 331 per cent."

FINAL EDITION OF "COURAGE AND DEVOTION BEYOND THE CALL OF DUTY"

The final edition of the book, "Courage and Devotion Beyond the Call of Duty," which is composed of official awards and citations received by U. S. medical officers during World War II, is now being prepared by Mead Johnson & Company, Evansville, Indiana.

Any physician, who has not already done so, should write to Mead Johnson & Co. advising them of the awards he has received and also send a typewritten or photostatic copy of his citations. Also: Present rank or rank at time of discharge; branch of service; from what university and in what year M.D. degree was received; date of entry into the service.

BOARD OF MEDICAL EXAMINERS OF THE STATE OF CALIFORNIA

By FREDERICK N. SCATENA, M.D.
Secretary-Treasurer

Board Proceedings

The Board of Medical Examiners met at the Mayfair Hotel in Los Angeles, August 25 to 28, 1947. Written examinations were conducted for 93 applicants for physician's and surgeon's certificates and two for chiropody certificates.

The following changes were made in the status of licentiates of the Board at the meeting held on the above mentioned dates:

Monte Salvin, M.D.—Found guilty of the charges set forth in the accusation and his license was revoked.

Robert P. Stock, M.D.—Found guilty of the charges set forth in the accusation and his license was revoked.

In conformance with a recent amendment to section 2147.5 of the Business and Professions Code the Board approved for residencies those hospitals that meet unconditionally the minimum requirements for general standardization set by the American College of Surgeons.

As a matter of information it should be understood that graduates of approved Canadian schools, while not designated as graduates of foreign medical schools by the Business and Professions Code at the present time, cannot apply for a reciprocity certificate unless they hold a license issued by some other state of the United States. They must take the regular written examination. Further the Code between September 15, 1935 and September 19, 1939 did designate Canadian schools as foreign medical schools. Therefore an applicant applying for reciprocity who was issued a license by some other state of the United States between the above mentioned dates, must meet the additional requirements of foreign medical school graduates should he apply for reciprocity.

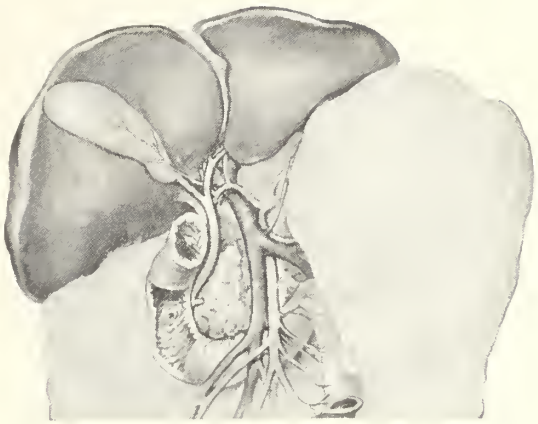
WATER BORNE DISEASES NOW AT THEIR LOWEST POINT IN U. S. HISTORY

Water borne diseases in general in the United States are now at their lowest point in our history, as the result obviously of the combined efforts of engineering and medical officials over the last half century, states a medical consultant in answer to a query in the July 19 issue of *The Journal of the American Medical Association.*

The sewage of somewhat more than 50 per cent of the total urban population of the United States is now treated before it is dumped into surface waters, he states, either by what is known as partial treatment or by complete treatment.

The Journal consultant points out that "the practice of discharging raw sewage has been continued not only because of the cost involved but because of a variety of complex legal, administrative and fiscal issues. Cost is a significant item in these considerations, but not the only item. Progress in correcting this situation has been materially retarded during the war period and in the present high level costs of labor and materials, in the postwar period."

He adds that "administrative attack on the problem, however, continues at a high level and it may be anticipated that the next 10 years will see billions of dollars expended in correcting the situation."



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PNEUMONIA IMMUNIZATION CUTS DEATH RATE OF OLDER PERSONS

A group of New York investigators, who made a six-year study of pneumonia in elderly patients, suggest immunization against the disease where high incidence rates prevail, as in epidemics, in institutions and in persons with a tendency to recurring pneumonia.

Writing in the current issue of the *Archives of Internal Medicine*, published by the American Medical Association, the investigators—Paul Kaufman, M.D., Attending Physician, Goldwater Memorial Hospital and New York City Home, C. O'Brien, M.D., Resident Physician and H. Stein, M.D., Resident Physician, New York City Home—state that they undertook their study in the older age group for several reasons:

First, they have a high incidence of pneumonia, mortality and case fatality rate. Second, repeated attacks of pneumonia occur frequently. Third, there was possibility for continuous observation, hospitalization and reexamination, since the patients were from the New York City Home and the Medical Division of the former Central and Neurological Hospital and the Goldwater Memorial Hospital, where higher age groups are treated.

During the six-year study , 1937-1943, 5,750 patients were immunized against pneumonia while 5,153 control patients were observed for comparison. Among the immunized group 99 developed pneumonia, an incidence rate of 17.2 per 1,000, of which 40 died, a mortality rate of 6.2 per 1,000. There were 227 cases of pneumonia among the non-immunized patients, an incidence rate of 44 per 1,000, with 93 deaths, a mortality rate of 19 per 1,000.

The antigen used in these experiments for immunization is made from a fraction of the pneumococcus, the organism responsible for pneumonia. The antigen, which incites production by the body cells of a substance to fight the bacteria, is a polysaccharide.

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MOSQUITO CONTROL REPORTS ON SUBVENTION PROGRAM

Of the $400,000 available for subventions to local mosquito abatement districts during the 1945-47 biennium, $395,425.48 were expended.

It is estimated that during this period, approximately $3,000,000 was used from local, state and federal funds for mosquito control in California.

Districts which received subvention funds from this department have a total area of 8,963 square miles.

During this period a great expansion occurred in the area covered by mosquito abatement districts. This information can be summarized as follows:

	Square miles
Total area in mosquito abatement districts before 1945	7,616
Annexations and new districts since 1945	5,233
Total area in districts, June 30, 1947	12,849

It is estimated that an additional 5,000 square miles may be eventually included in mosquito control work by formation of new districts and annexations to already formed districts.

California's mosquito control subvention program was started in 1946 when the State Legislature enacted a bill to provide state assistance of local agencies for the control of disease bearing mosquitoes on a 50 per cent matching basis. This department was authorized at that time to enter into cooperative agreements with any local district or other public agency engaged in the work of controlling mosquitoes.

(Continued on Page 60)

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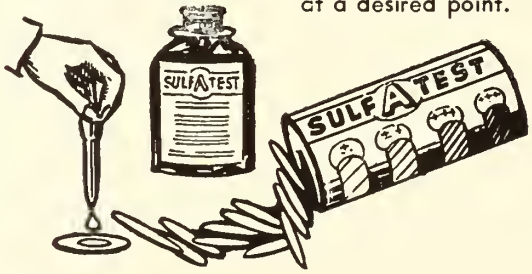
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Transcending just "food" and "digestion" —both authors realized the important correlation between infections and nutrition, and between children's diseases and nutrition —and special chapters are written to cover these subjects. These chapters include detailed discussion of the disease, followed by etiology, pathogenesis, symptoms, diagnosis and treatment in each case.

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MOSQUITO CONTROL REPORTS ON SUBVENTION PROGRAM

(Continued from Page 58)

In applying for funds a district is required to submit a statement on the prevalence of malaria and human and equine encephalitis, to prepare a map showing cases during the preceding five years and the proposed disease-control area, to present a budget and to state the qualifications of the person having technical responsibility for the program.

The work of the Mosquito Control Section in its relationships with local mosquito abatement districts forms only one part of the Department's mosquito-borne disease control activities. For an analysis of the entire program, readers are referred to the July, 1947, issue of *California Medicine*, page 28 of which contains an article "California's Plan for the Study and Control of Mosquito-borne Diseases" by Dr. Lester Breslow and Mr. Arve Dahl of this Department.—From *California Health*, published by the California Department of Public Health.

FIND COMBINATION OF DRUGS EFFECTIVE FOR ULCERATIVE COLITIS

Patients with chronic ulcerative colitis, an infectious disease of the large intestine, were effectively treated with penicillin taken by mouth and an intestinal sulfonamide, phthalylsulfathiazole, according to Michael M. Streicher, M.D., of Chicago.

Writing in the May 24 issue of *The Journal of the American Medical Association*, Dr. Streicher, who is assistant professor of medicine, University of Illinois College of Medicine, treated 45 patients with this disease.

The author points out that the combination of drugs was very effective because such infectious agents as the staphylococcus, which is responsible for boils and the streptococcus, which causes "strep" throat, are present in the intestines in ulcerative colitis. . . .

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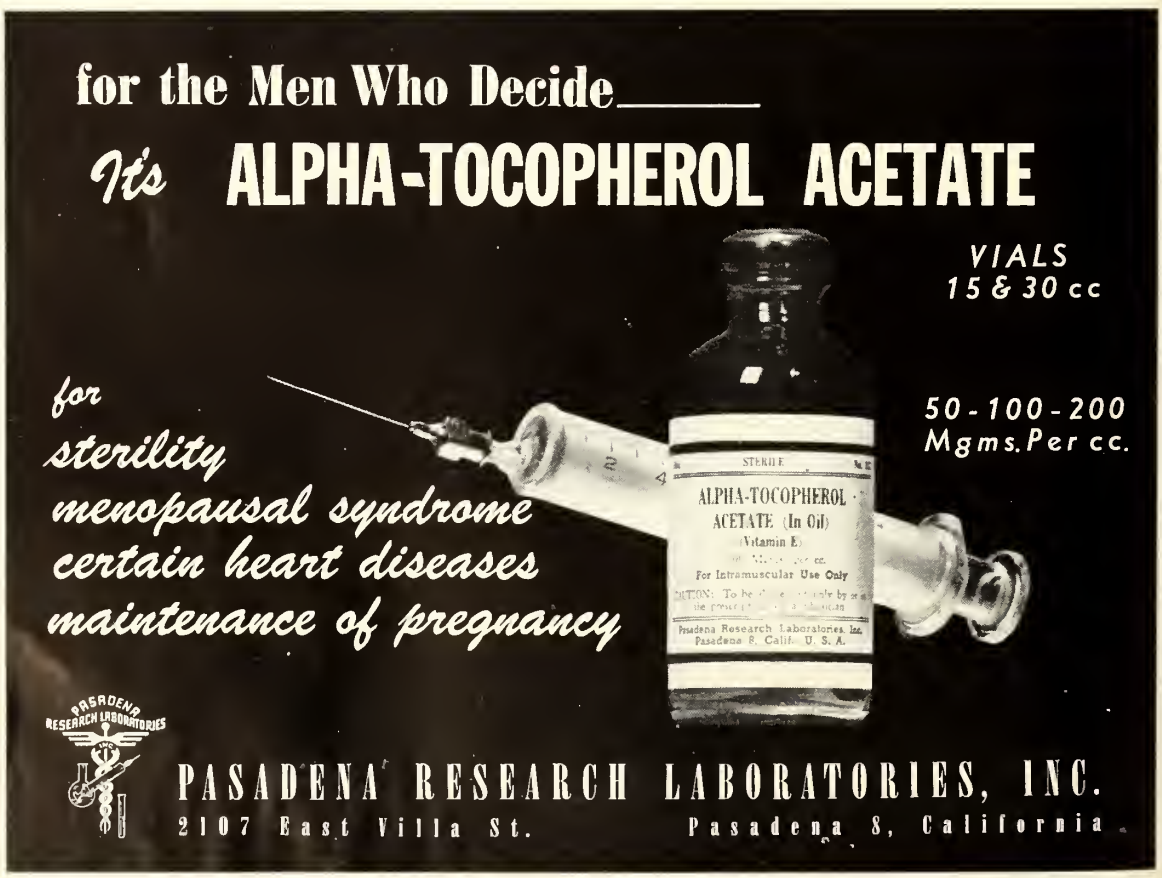
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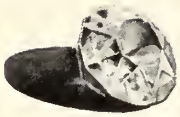
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1. Feinberg, S. M.: Quart. Bull. Northwestern Univ. M. School 20: 398 (1946)

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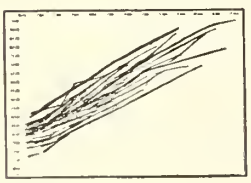
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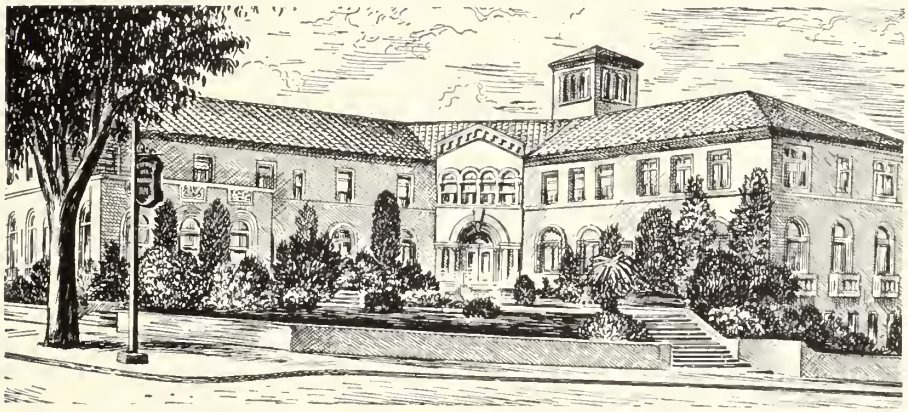
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MERCED County Medical Society.....	E. R. Fountain, Merced.	James A. Parker, Bank of America Bldg., Merced.	Third Thursday, Hotel Tioga, Merced.
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NAPA County Medical Society.....	Charles H. Bulson, 1203 Seminary St., Napa.	M. M. Booth, Bruck Bldg., St. Helena.	First Wednesday.
ORANGE County Medical Association.....	John Montanus, Rt. 1, Box 587A, Santa Ana.	Llewellyn E. Wilson, 502 Bank of America Bldg., Anaheim.	First Tuesday, 7:00 p.m., Windsor Cafe, Santa Ana.
PLACER-NEVADA-SIERRA Co. Med. Soc....	Paul Barnes, Loomis.	Vernon W. Padgett, Grass Valley.	At Call of President.
RIVERSIDE County Medical Association.....	Franklyn D. Hankins, 3014 Pine St., Riverside.	Cecil Lord, 3616 Main St., Riverside.	2nd Mon., 8:00 p.m., Library, Riverside Community Hosp.
SACRAMENTO Soc. for Med. Improvement.	Dudley Saeltzer, Medico-Dental Bldg., Sacramento.	Edmund E. Simpson, 1127 11th St., Sacramento 14.	Third Tuesday, 8:30 p.m., Auditorium, Sacramento.
SAN BENITO County Medical Society.....	J. M. O'Donnell, Hollister.	J. J. Haruff, Hollister.	At Call of President.
SAN BERNARDINO Co. Medical Society.....	Marcus D. White, 201 Fallas Bldg., Ontario.	Carl M. Hadley, 315 Platt Building, San Bernardino.	1st Tues., 8:00 p.m., San Bernardino Co. Charity Hosp.
SAN DIEGO County Medical Society..... 101 Medico-Dental Bldg., San Diego 1.	F. E. Jacobs, 4228 El Cajon Blvd., San Diego 5.	W. H. Geistweit, Jr., 810 Med. Bldg., 233 A St., San Diego 1.	Second Tuesday, San Diego Club.
SAN FRANCISCO County Medical Society... 2180 Washington St., San Francisco 9.	Anthony B. Diepenbrock, 2180 Washington St., San Francisco 9.	Robertson Ward, 2180 Washington St., San Francisco 9.	2nd Tues., 8:15 p.m., 2180 Washington St., S. F. 9.
SAN JOAQUIN County Medical Society.....	Dora Ames Lee, 110 North San Joaquin St., Stockton 6.	H. D. Chope, Box 111, Stockton.	1st Thurs., 8:15 p.m., Medico-Dental Club Rms., Stockton.
SAN LUIS OBISPO County Medical Society.	H. N. Cookson, 154 Traffic Way, Arroyo Grande.	G. D. Kelker, Cayucos.	3rd Sat., 7:00 p.m., Golden Dragon Cafe, San Luis Obispo
SAN MATEO County Medical Society.....	Stuart Lindsay, 440 Portola, San Mateo.	Albert G. Miller, Medical Arts Bldg., San Mateo.	Third Tuesday of each month.
SANTA BARBARA County Medical Society..	D. H McNamara, Cottage Hospital, Santa Barbara.	Douglas F. McDowell, 317 W. Pueblo St., Santa Barbara.	Second Monday, Cottage Hospital.
SANTA CLARA County Medical Society..... 1101 Medico-Dental Bldg., San Jose 20.	Joseph B. Josephson, 1541 The Alameda, San Jose 11.	Leslie B. Magoon, 630 E. Santa Clara, San Jose 12.	
SANTA CRUZ County Medical Society.....	Luther Newhall, Jr., Ocean and Broadway, Santa Cruz.	Samuel B. Randall, 230 Walnut Ave., Santa Cruz.	Every 2nd month, 2nd Tues. Time, place to be announced.
SHASTA-TRINITY County Medical Society.	L. C. Mosher, Bieber.	Julius M. Kehoe, Redding.	Second Monday.
SISKIYOU County Medical Society.....	Richard W. Jones, 106 South Broadway, Yreka.	F. W. Martin, Mt. Shasta.	Sunday on Call.
SOLANO County Medical Society.....	H. Randall Madeley, 727 Sonoma St., Vallejo.	Charles H. Widenmann, 405 Georgia St., Vallejo.	2nd Thurs., 8:00 p.m., Casa de Vallejo, Hotel Vallejo.
SONOMA County Medical Society.....	Ernest Vieira, Sebastopol.	Raimond F. Clary, 1616 Fourth St., Santa Rosa.	Second Thursday.
STANISLAUS County Medical Society.....	Andrew Van De Pol, P. O. Box 944, Modesto.	J. Lyle Spellman, 138 McHenry Ave., Modesto.	Second Friday, 7:30 p.m., Hotel Hughson.
TEHAMA County Medical Society.....	James L. Faulkner, Red Bluff.	Arthur H. Meusser, Corning.	At Call of President.
TULARE County Medical Society.....	Frank R. Guido, Box 1094, Visalia.	Debora Pineles, Box 349, Visalia.	
VENTURA County Medical Society.....	D. M. Clark, Foster Memorial Hospital, Ventura.	A. A. Morrison, 34 North Ash, Ventura.	
YOLO County Medical Society.....	Max Waters, Porter Bldg., Woodland.	Emery Leivers, Woodland Clinic, Woodland.	First Wednesday.
YUBA-SUTTER-COLUSA Co. Medical Soc....	John W. Scott, Colusa.	Leon M. Swift, Box 244, Marysville.	Second Wednesday.

(For roster of C.M.A. committees and other organizations, see last month's issue)

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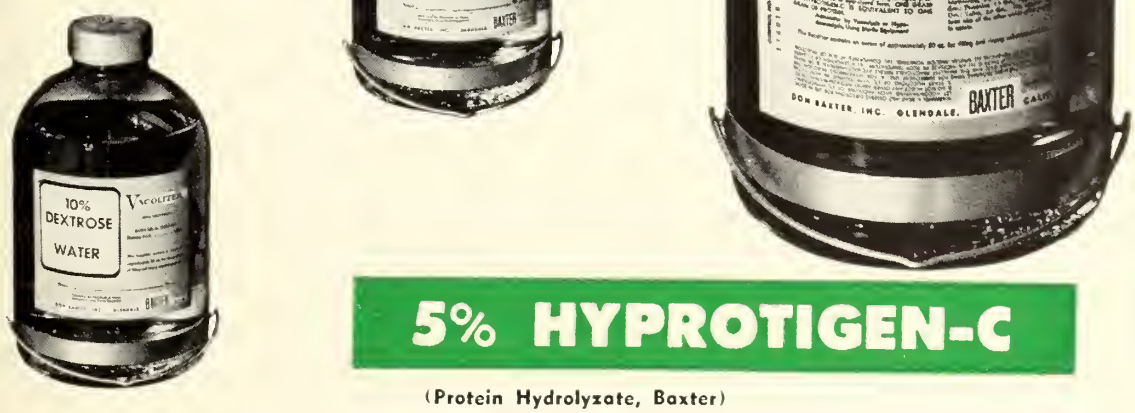
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Over a ten-year period the percentage of operable cases of cancer of the stomach, which ranks second only to cardiovascular disease as the commonest cause of death in the United States, has steadily risen. During the same period the percentage of cases in which surgeons recommended gastric resection—involving the removal of part or all of the stomach—has also increased. At the same time, the mortality rates for operation have dropped remarkably.

These facts are revealed in the October 4 issue of *The Journal of the American Medical Association*, in which David State, M.D., George Moore, M.D., and Owen H. Wangensteen, M.D., all members of the Department of Surgery of the University of Minnesota Medical School, report a ten-year survey of the results of surgical treatment of gastric cancer at the University of Minnesota Hospitals.

However, the three doctors also report a decrease in the percentage of operations which actually cured the disease, due to the ever-increasing number of resections undertaken for temporary relief after the hope of lasting cure was gone. "The only way in which the end results may be improved is by earlier diagnosis," say the writers.

The total number of patients included in this survey was 586, and the average age was 63.2 years.

(Continued on Page 17)

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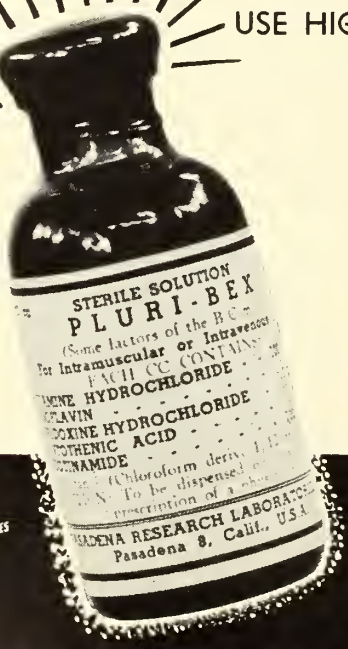
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MORE OPERATIONS FOR STOMACH CANCER EACH YEAR; FEWER MORTALITIES

(Continued from Page 16)

(Nineteen patients were in the last stages of their disease when first seen.) The number of patients operated on was 447. A partial gastric resection was performed in 276, a total gastric resection in 31. A summary of the results shows that:

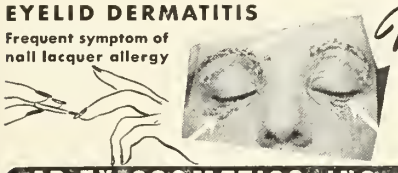
In 1936 the operability and resectability rates were 57 per cent and 28 per cent, whereas in 1945 these rates were, respectively, 88 and 80 per cent. The resectability rate for 1945, based on the number of patients explored, was 89.7 per cent.

The mortality rate for partial gastric resection in 1936 was 25 per cent, while in 1945 it was 4.9 per cent—a figure which includes both total and subtotal gastrectomy.

The over-all mortality rate for partial resections was 15.2 per cent, for total gastric resections 30 per cent. Of those who survived resection and whose resections took place long enough ago to be included, 29.4 per cent survived three years or more, 21.5 per cent five years or more.

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1 *Barnes, J.: Brit. M. J., 1:79, 1944.*

2 *Sevringhaus, E. L. and Sikkema, S. H.: Am. J. Med., 2:251 (Mar.) 1947.*

3 *Finkler, R. S. and Becker, S.: J. A. M. W. A., 1:152, 1946.*

4 *Finkler, R. S. and Becker, S.: A Preliminary Evaluation of Dienestrol in the Menopause, Am. J. Obst. and Gynec., 53:513 (Mar.) 1947.*

5 *Cantarow, A., Rakoff, A. E. et al: Preliminary Studies of Dienestrol (Tentative Title) to be published.*

6 *Gordon, E. S.: Value of Dienestrol in the Menopausal Syndrome (Tentative Title) to be published.*

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EPILEPTIC PATIENTS IMPROVED MOST BY DIET, SAYS PHYSICIAN

Diet, not drugs, is the most important factor in the treatment of children who have epileptic convulsions, says Haddow M. Keith, M.D., Rochester, Minn., in the current issue of the *American Journal of Diseases of Children*, published by the American Medical Association.

A member of the Section on Pediatrics at the Mayo Clinic, Dr. Keith came to this conclusion after studying a large number of epileptic patients at the clinic who were treated with drugs, with a diet consisting chiefly of proteins and fats (no sugars or starches), and with both drugs and diet. A larger proportion of those in the last two groups either recovered or were improved.

Epilepsy is a disturbance in the rhythm of the brain from which one person out of every 200 in the United States is known to suffer. There is a recognizable epileptic rhythmic pattern, and in studying the brain through electroencephalography this pattern has been found in a great many individuals who show no signs at all of having convulsions. In some cases obvious damage to the brain is held responsible for the disease, but usually it seems to be caused by disturbances of body chemistry about which not very much is known. Epileptic attacks are most common in children, and may decrease, become less severe or disappear in later life even without treatment. These attacks take the form of grand mal, in which the sufferer loses consciousness, twitches and gets blue in the face; petit mal, in which the blacking-out of consciousness lasts for only a few seconds; psychomotor attacks, in which the sufferer seems to be conscious but doesn't remember afterwards what has happened; or Jacksonian seizures, characterized by an uncontrollable jerking limited to one side of the body.

In Dr. Keith's study two groups of patients were selected. The first group consisted of 300 consecutively admitted patients with epilepsy who were examined at the Mayo Clinic in 1940 or 1941 and for whom treatment was started at the time of the examination. One hundred eighty-seven of these patients reported from time to time until 1945. All of these had grand mal or petit mal or both, and all were treated either with diphenylhydantoin sodium and phenobarbital, alone or in combination, with the diet already mentioned or with a combination of the diet and the drugs. Where the diet was used it was maintained until the patient had been free of attacks for one year or more. It was then gradually changed to a normal diet, usually with a moderately limited amount of carbohydrate. When drugs were used in addition to the diet they were usually continued after the change in diet had been made.

Thirty-eight of the patients suffered from definite brain damage, and less than one-half of these were affected in any way by treatment. In those who improved the drugs seemed to have had more effect than the diet. Of the remaining 149 without obvious brain damage, however, approximately 27 per cent of those receiving the diet remained completely free of attacks for periods of from one to five years. Only

(Continued on Page 24)



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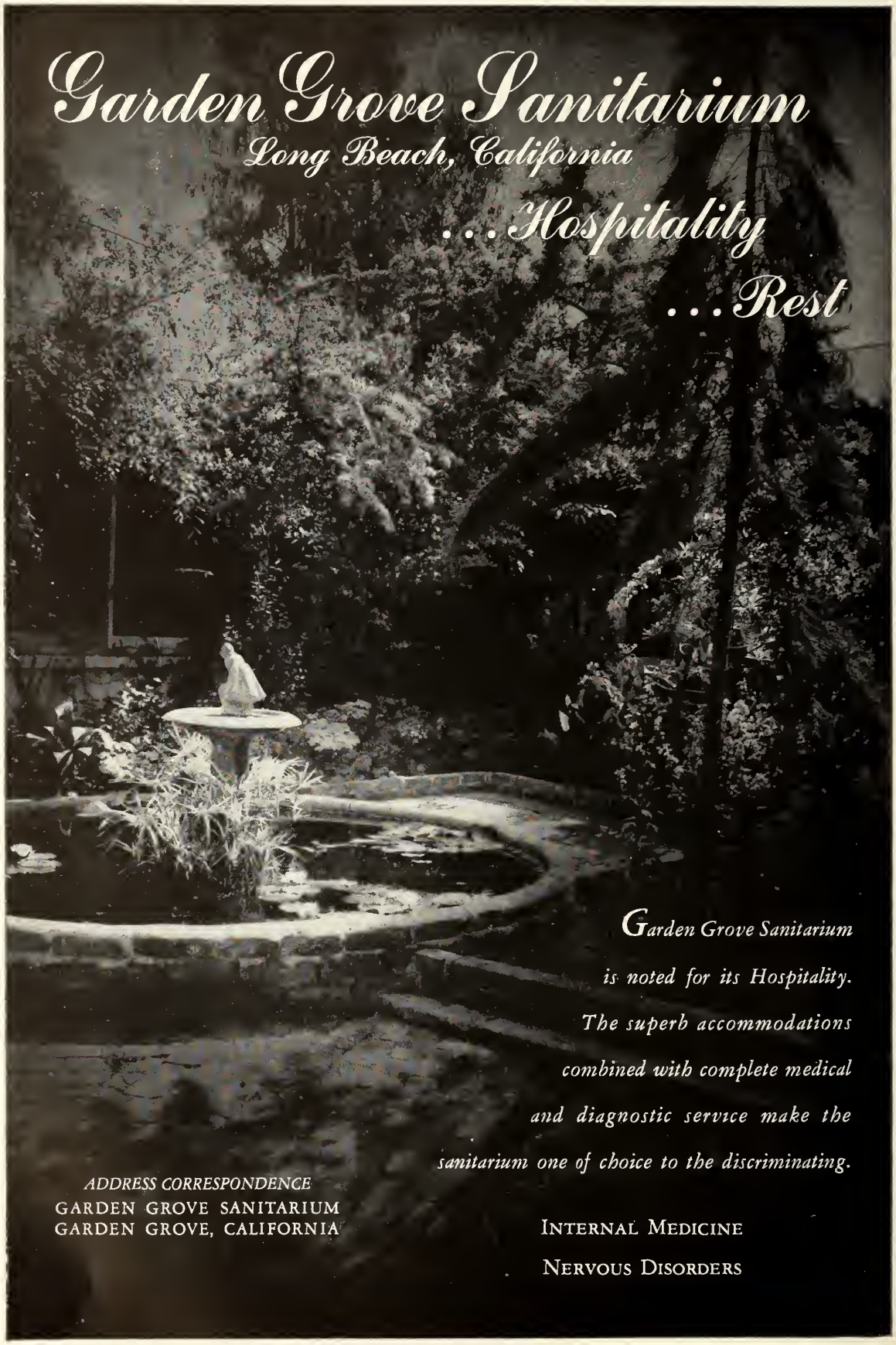
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EPILEPTIC PATIENTS IMPROVED MOST BY DIET, SAYS PHYSICIAN

(Continued from Page 20)

about 12 per cent of those who received drugs but no diet remained well.

Dr. Keith's second group included all of the 311 patients started on treatment with the diet, alone or with drugs, at the clinic during the period from 1921 to 1930 inclusive. Their records were studied up to and including 1945. Of these, 190 patients had no obvious brain damage and gave the diet a fair trial. More than one-half of the 190 patients improved; 67, or 35 per cent, remained completely free from attacks for periods of from four to 22 years: and 33 remained well for 15 years or more. Patients with grand mal alone were most favorably influenced by the diet, those with petit mal alone were rather less favorably influenced and those with both grand and petit mal were the least definitely benefited.

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Harding, T. S.: M. Rec. 160:198 (April) 1947.

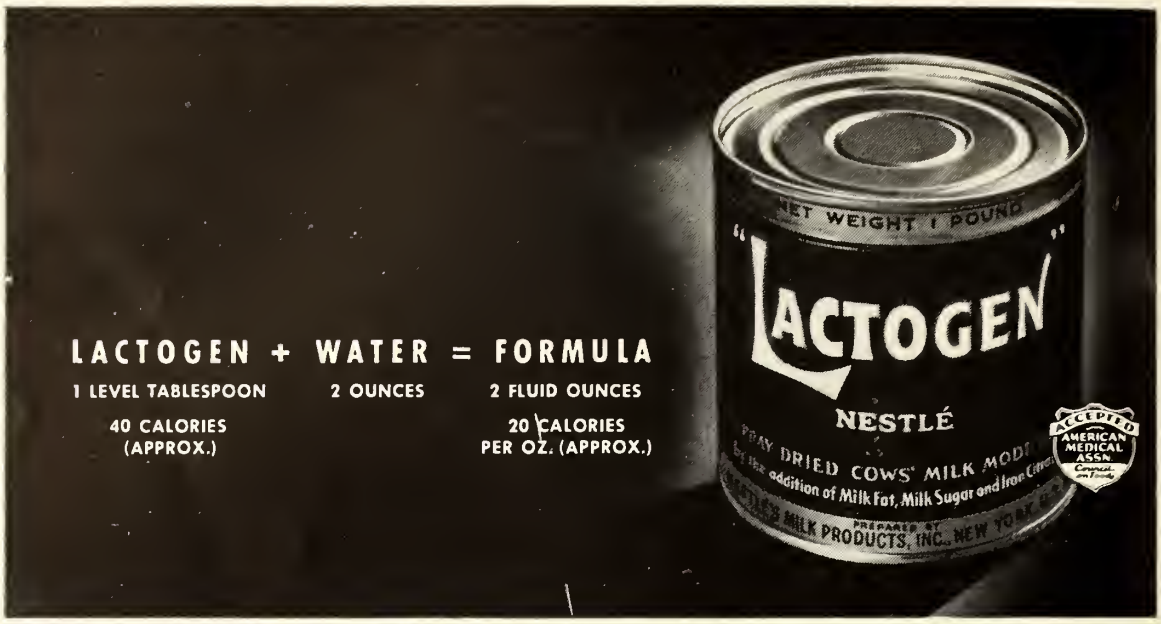
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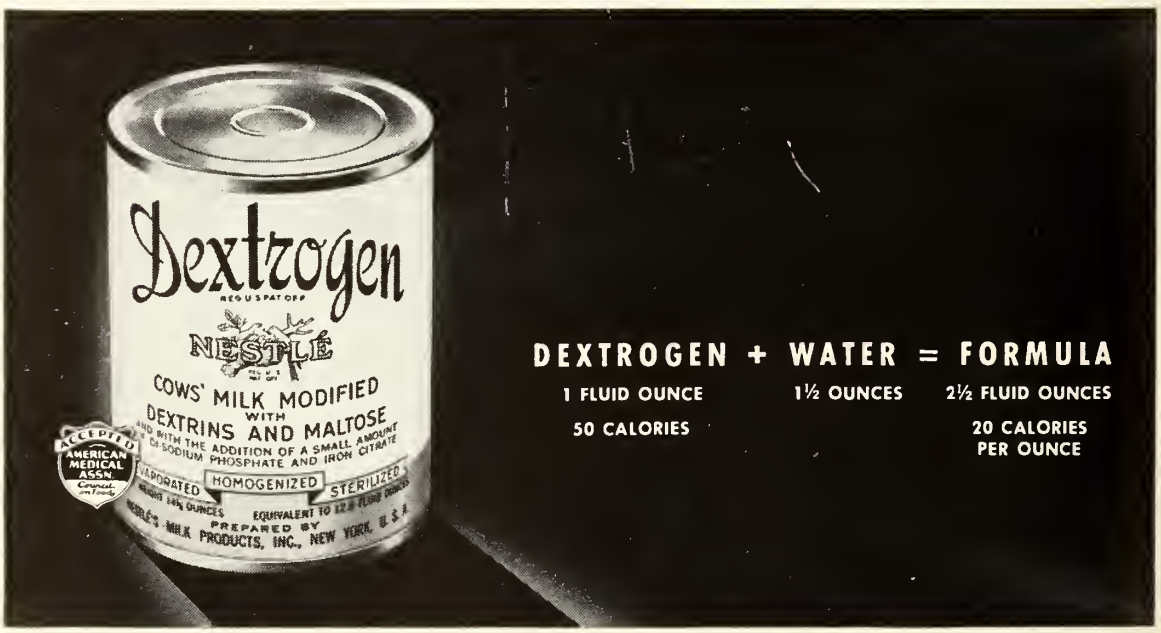
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PATIENTS IN ALLIED COMMISSION CAMPS DEVELOP "D. P. DISEASE"

According to the Jerusalem correspondent of *The Journal of the American Medical Association*, the name "D. P. disease" has been chosen to describe the symptoms observed in a number of patients in the Allied Commission camps in Italy. In an article in the October 4 issue of *The Journal*, he reports that in 37 cases the symptoms were almost identical. The patients had felt fairly well as long as they were in concentration camps or with the partisans, but the first signs of stomach-intestine trouble appeared immediately after they came to the UNRRA or AC camps. The main complaints were fullness and pressure in the stomach immediately after meals and a feeling of burning or pains late at night. The complaints were alleviated during the intake of food. The cases were finally diagnosed as atrophic gastritis combined with vitamin B deficiency, and large doses of liver extract given over prolonged periods finally achieved complete cure.

BRITAIN EXPECTS 5,000 POLIO CASES

At the present rate at which poliomyelitis cases are being reported, Britain expects 5,000 cases before the end of 1947, writes the London correspondent in the October 4 issue of *The Journal of the American Medical Association*. This will be the highest number for any year since the 1912 requirement that all cases be reported to authorities.

Measures for dealing with the outbreak were recommended at a special meeting of 30 health officers.

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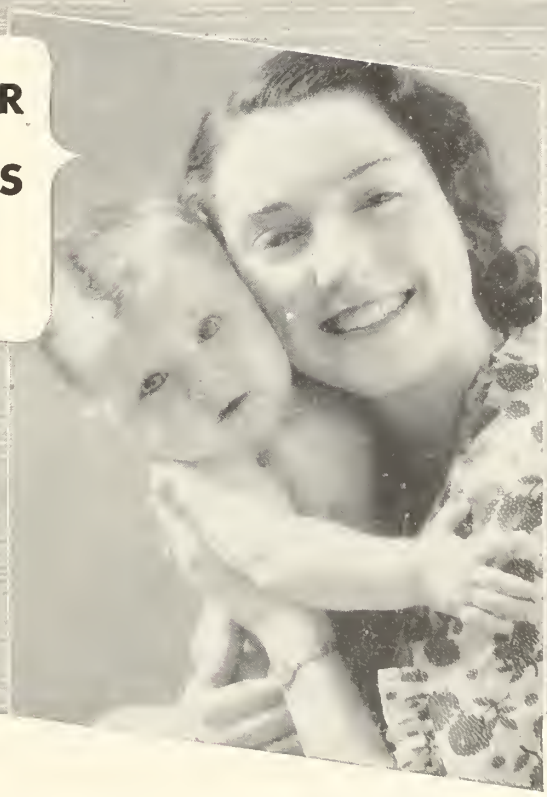
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DOCTOR URGES MORE HOSPITALS TO ESTABLISH CANCER CLINICS

In the October 4 issue of *The Journal of the American Medical Association*, Leonard B. Goldman, M.D., Long Island, N. Y., a staff member of Queens General Hospital in New York City, describes the Cancer Prevention and Detection Clinic recently set up at his hospital. With older, better known clinics such as those at Memorial Hospital and the Women's Infirmary so overcrowded that appointments for examinations must be made months in advance, he urges more hospitals to establish clinics similar to the one at Queens.

"The public, due to the effective educational campaign of the American Cancer Society, has been taught to seek medical advice at an early date and is now prepared for a preventive type of cancer control." he writes. "But many members of the medical profession are not equipped or lack the time to give the complete examinations necessary to rule out beginning cancer. With the great extension of knowledge in the oncologic [pertaining to tumors] field and the tremendous responsibility associated with early diagnosis, cancer has ceased to be a one man job. Group teamwork is essential. . . .

"Until more is known about cancer, the most effective step for controlling this disease is the establishment of clinics where apparently healthy persons can be periodically examined. Such clinics would thoroughly study these persons in order (1) to detect early cancer, (2) to help prevent its development by eliminating its precursors, (3) to educate patients to avoid known carcinogenic [cancer-inducing] agents and (4) to expedite the referral of the involved patient for the proper treatment."

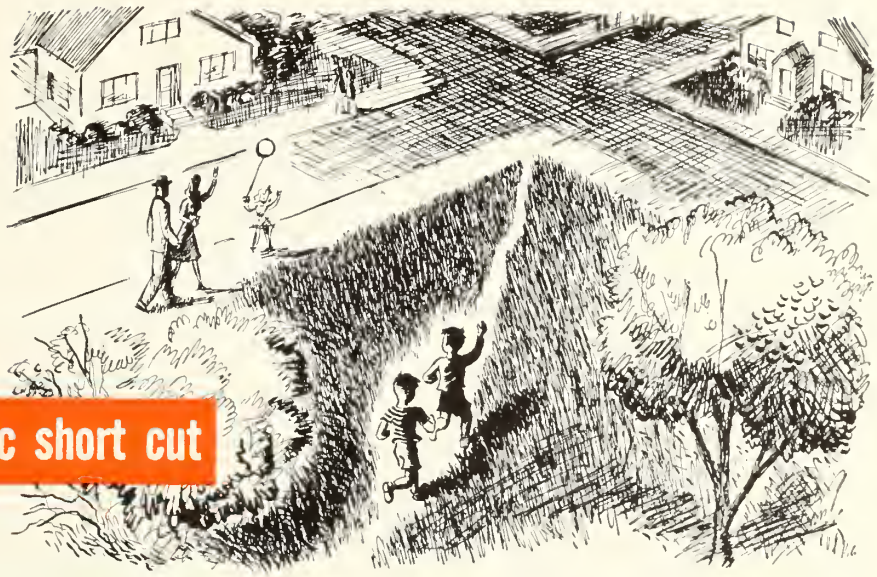
The clinic at Queens is free, since the hospital is a municipal one and only persons entitled to city care are admitted. The director is a tumor specialist: the medical staff consists of an internist, a surgeon, a gynecologist, an ear and throat specialist and a skin specialist. The clinic is held two nights a week, and approximately eight new persons are examined at each session.

A secretary and a social worker first take down the social and medical histories of the patients, including their family histories with reference to the incidence of cancer and its location for at least two generations. A laboratory technician collects specimens necessary for the routine laboratory tests. The patients are then ready for a thorough physical examination, including x-rays of the chest, esophagus and stomach.

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"The patient returns in a week to be seen in conference with the five specialists." Dr. Goldman writes. "Each physician reports his observations. If there are no positive ones, the patient is given an appointment to return in one year if under the age of 40 or in six months if over 40 or if there is a strong family history of cancer. Should any unusual

(Continued on Page 34)



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1. Editorial: J. A. M. A. 121:346, 1943
2. Nadal, J. W.: Northwest Med. 46:444, 1947
3. Sprinz, H.: M. Clin. North America 30: 363, 1946
4. Brunschwig, A., Clark, D. E., and Corbin, N.: Mil. Surgeon 92:413, 1943

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DOCTOR URGES MORE HOSPITALS TO ESTABLISH CANCER CLINICS

(Continued from Page 30)

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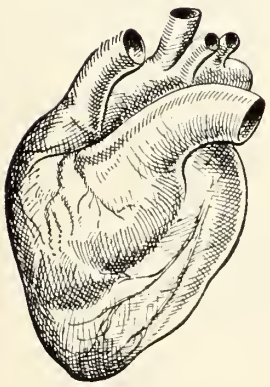
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★ BIBLIOGRAPHY

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J. A. Ph., A., (Sc. Ed.) 35:304, 1946.

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*Vital Statistics—Special Reports: Vol. 25, No. 12, National Office of Vital Statistics, Washington, D. C. (Oct. 15) 1946, p. 206.

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TAKE LEAD IN PUBLIC AFFAIRS, A. M. A. HEAD TELLS DOCTORS

Edward L. Bortz, M.D., of Philadelphia, president of the American Medical Association, believes the world needs more "medical statesmanship"—more participation in public affairs by physicians "even at the cost of less time in the office, clinic, or laboratory."

"Medicine should play a leading part in directing the destinies of the social order," Dr. Bortz asserted in a speech prepared for delivery before the 13th Annual Scientific Assembly of the Medical Society of the District of Columbia in Washington, D. C., on Wednesday evening, October 8, 1947.

Observing that "in the last century the accomplishments of medical science have brought about more effective control of disease, increased the life span, and extended the useful years," Dr. Bortz added that "there are large segments of our own population and throughout the world national groups who, for various reasons, have not participated in the magnificent benefits that modern scientific medicine has to offer. The time is appropriate for a consideration of means which may bring these benefits to the less favored groups of human society."

"What has this to do with medical statesmanship?" Dr. Bortz asked. "In the Pennsylvania State Medical Journal one reads that 'medical statesmanship comprises the art of changing health conditions from what they are to what they ought to be.' At many medical centers throughout the nation each year medical organizations are carrying on superb courses of postgraduate instruction for practicing physicians. Recognized teachers are presenting important new data for physicians to carry back home. The practice of medicine is increasingly effective in the treatment of various common infections, nutritional deficiencies, metabolic abnormalities, and many kinds of tumor growths."

In spite of this, the A.M.A. head charged, in recent years "members of the medical profession too often have neglected their obligations as citizens."

In the years when a medical career in itself was not so exacting and time consuming, physicians helped to make American history, Dr. Bortz reminded his listeners. "Twenty-one members of the First Provincial Congress were physicians," he reported. "Three physicians signed the Constitution of the United States, and six signed the Declaration of Independence. According to Browning, 274 physicians served in Congress between 1789 and 1910." Many physicians have been governors of states. Dr. John Evans was not only territorial Governor of Colorado at one time, but was a founder of universities and a railroad builder. In more recent years there have been Dr. Hubert Work, Dr. Ray Lyman Wilbur and Gen. Leonard Wood. France can boast that Clemenceau was a doctor; China remembers Dr. Sun Yat-sen.

Today, with society in danger of destruction, physicians must resume their role in public affairs, Dr. Bortz said. Physicians, he pointed out, are trained in the experimental and scientific methods which are the methods of democracy—and these must be applied to social problems. "Unfortunately in the social sciences emotionalism and evangelism have

too often replaced scientific detachment and accurate analysis."

And the scientific method means non-partisanship, Dr. Bortz emphasized. "Medical statesmanship, the participation of physicians in the great art of statecraft, has much to offer," he stated. "The time is at hand for cooperation on all issues in which there is common agreement. Known facts should be clarified, then immediately utilized in producing a healthier society. The scientific method should be encouraged for the discovery of new and better ways to better health. Social experiments for the improvement of health and the control of disease may be set up locally, under controlled conditions, and supervised by members of the medical profession and representatives from other civic groups, to study the issues on which there is a reasonable difference of opinion. Experiment, observe, reason, then conclude. The elimination of rancor, emotional outbursts, false accusations is essential to the rational study of the problem of medical care for the entire nation."

Dr. Bortz said that energetic leadership in American medicine could play a dominant role today through (1) public education; (2) more adequate medical care for all portions of the population; (3) the promotion of a World Medical Association; (4) the presentation of a nationwide emergency medical plan to Congress and American military leaders to be ready for use in the event of another international conflict; (5) medical research applied to the furtherance of social progress.

Enlarging on these five objectives, Dr. Bortz said that health should be taught in all schools and colleges, with adequate credit given.

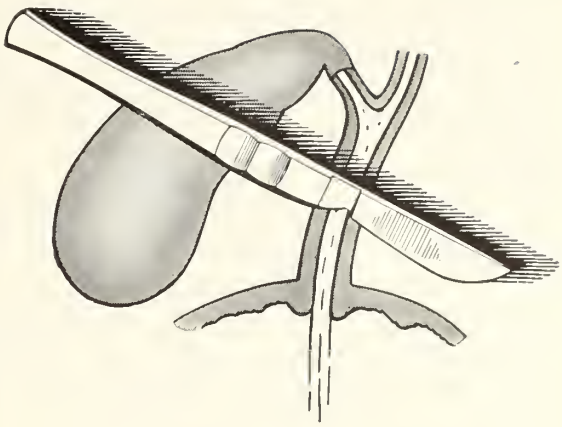
In communities where deficiencies in medical care exist he suggested that social experiments be established under the leadership of medicine. "The population of our nation is heterogeneous," he observed. "It is made up of many nationalities and groups with every conceivable variety. The needs of one region are not those of the whole. By local experimentation adequate measures for medical service to all persons can be more satisfactorily developed."

A World Medical Association, he said, would promote closer ties among the national medical organizations and among the doctors of the world, would organize an exchange of medical information, would establish relations with the World Health Organization, UNESCO and other appropriate bodies, and would "assist all peoples of the world to attain the highest possible level of health."

As for the fourth objective, Dr. Bortz stated that "today organized medicine can render a great service to the national security by the support of the augmented medical program which is now becoming a reality for the Armed Forces. In the next conflict all areas of the nation may be vulnerable. Accordingly a nationwide emergency medical plan is indicated."

Finally, Dr. Bortz said "the acquisition of additional medical knowledge through research is vitally necessary. Its application through medical statesmanship should be directed towards social progress. Support of research by government and private agencies should uncover helpful information in the control of the major disorders. The degenerative lesions of the body, cancer, tuberculosis, diabetes,

(Continued on Page 44)



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*Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154

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(Continued from Page 41)

rheumatism and the others, will eventually yield to the never ceasing search of medical investigators. If these are brought under control, unless there is a closer understanding of human relationships at the individual, and also at the national and international levels, mankind will have gained an empty victory. Society needs to mobilize its forces today for the control of anti-social and unhealthy human trends which have brought two world catastrophes within the past quarter century. The enduring satisfactions of human existence may be attained for mankind when the scientific methods which have brought such spectacular results in the control of somatic diseases have been extended into the sphere of human relationships. Therein lies the hope for the human race.

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*Long, C.-F., M.D.: Edrisal in the Management of Dysmenorrhea, Indust. Med. *15*:679 (Dec.) 1946. Indust. Nurs. *5*:23 (Dec.) 1946.

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PREVENTION OF DISEASE UP TO PUBLIC AS WELL AS PHYSICIAN

"At the present time approximately 4,000,000 Americans are suffering from heart disease, and another 5,300,000 from hardening of the arteries and high blood pressure," Edward L. Bortz, M.D., Philadelphia, president of the American Medical Association, pointed out in a paper prepared for delivery before the 12th Annual Meeting of the Mississippi Valley Medical Society, Burlington, Iowa, Thursday afternoon, October 2, 1947.

"In our population of 140,000,000 people," Dr. Bortz continued, "one out of every 20 is a victim of some form of heart or blood vessel disorder. This is a rather appalling condition when one considers that the battle casualties in World War II, which took the lives of 325,000 of our finest boys and girls, were occurring at the time that 2,000,000 men, women, and children at home were destroyed by lesions of the heart and vascular system. There are three times as many deaths due to diseases of the cardiovascular system as occur from cancer, and six times as many as are caused by accidents, 10 times as many as occur from tuberculosis."

Dr. Bortz observed that "it is rather remarkable to consider that in 1945 the American public contributed $16,000,000 for research and care of patients with infantile paralysis, which represented $13,490 per death. On the other hand, $39,000 was contributed for the same kind of service including research and other beneficent activities directed to amelioration of symptoms of cardiovascular disorders, which represented .07 or 7 cents per death for the most common of all destructive processes of human life."

Nor are disorders of the heart and blood vessels the only diseases which take an unnecessary toll of American lives, the A.M.A. head emphasized. In 1945 the leading causes of death in the United States were:

Diseases of heart and blood vessels	587,000
Cancer	177,000
Accidents	96,000
Nephritis	88,000
Pneumonia	68,000
Tuberculosis	53,000

Turning to draft statistics, Dr. Bortz stated that "approximately 35 per cent of the 15,000,000 men examined for selective service were rejected as unfit for military duty. Some 1,875,000 were turned down because of nervous and mental disorders. Another 444,800 were rejected because of total blindness, deafness, deaf mutism, or loss of limb. Of those rejected for mental conditions, 582,100 were mentally deficient, mostly morons, imbeciles, and idiots. Some 280,000 had syphilis to such an extent as to render them useless for military discipline and 220,000 had hernial defects. With 160,000 some visual disturbance ruled them out."

"An over-all survey of the medical needs of the

(Continued on Page 54)

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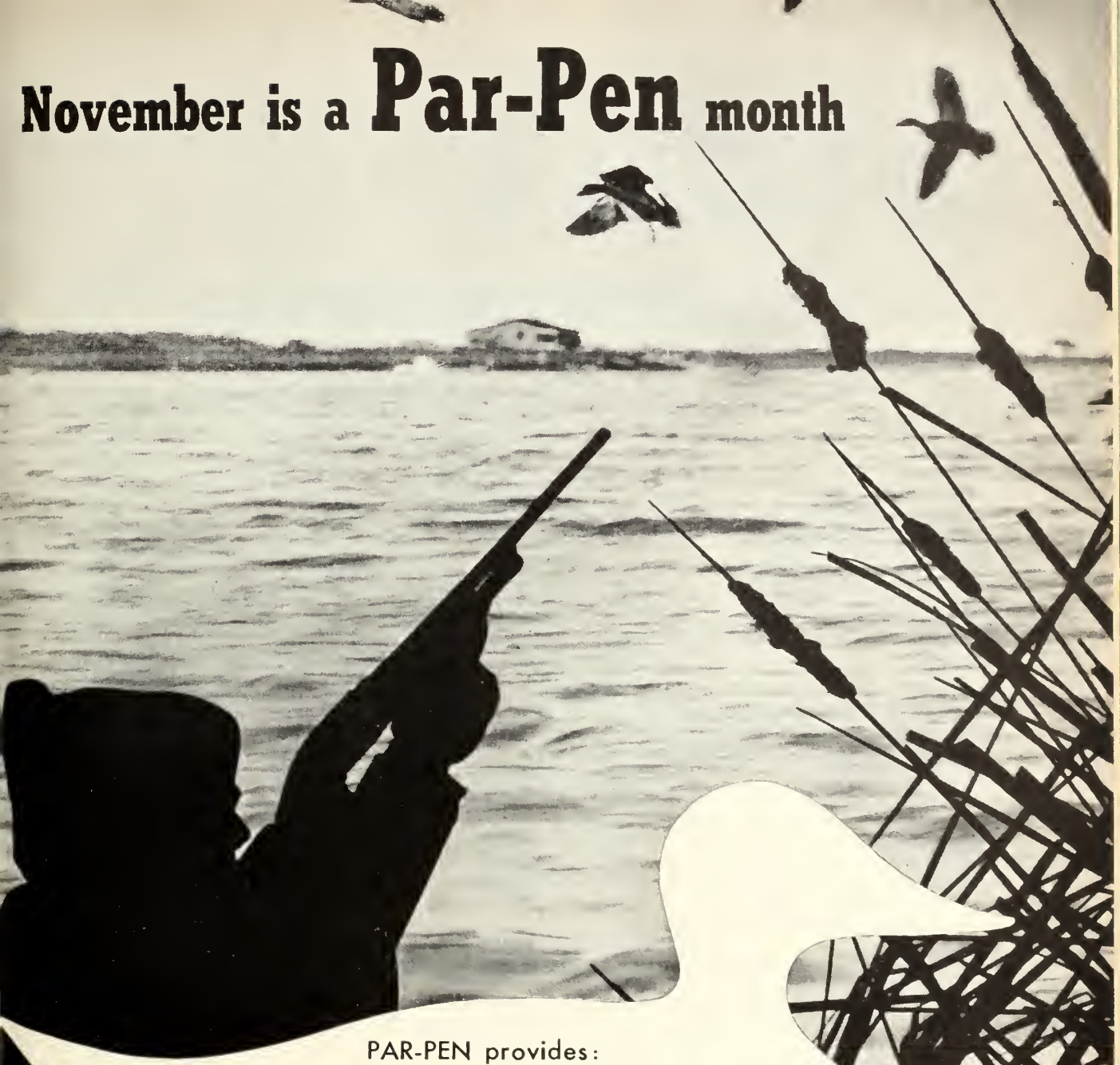
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PREVENTION OF DISEASE UP TO PUBLIC AS WELL AS PHYSICIAN

(Continued from Page 50)

nation today suggests that about 50 per cent of disorders, diseases, and accidents are preventable," Dr. Bortz said. And yet, he added, it has been estimated that "the sum expended for industrial research is 12 times that which has been expended for medical research. Our nation in 1945 invested more money in the researches to study plant and animal disease than it did for the study of the control of the destructive forces which consume our population."

"It is only in those communities where the public has elected to avail itself of the benefits which modern science has to offer that the life span has been increased," he observed. "For example, among the white population of certain states like South Dakota, Massachusetts, and New Hampshire, the average life span is close to 68 years. However, among the Negro population in the southland where illiteracy is high and modern health safeguards are not yet utilized, the life span averages approximately 50 years, and has not changed appreciably in the last quarter century."

Dr. Bortz concluded:

"It is high time for the public, and the loquacious minority which is screaming for the physicians to do something about the medical situation, to realize that a program of health education, accident prevention, prophylaxis against various diseases, a modern nutritional program for all schools, and periodic health

(Continued on Page 58)



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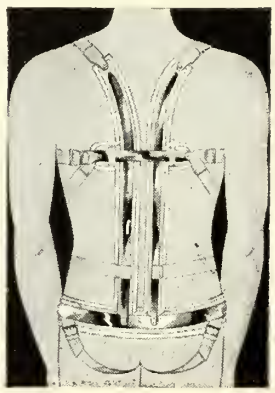
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PREVENTION OF DISEASE UP TO PUBLIC AS WELL AS PHYSICIAN

(Continued from Page 54)

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(Continued on Page 62)

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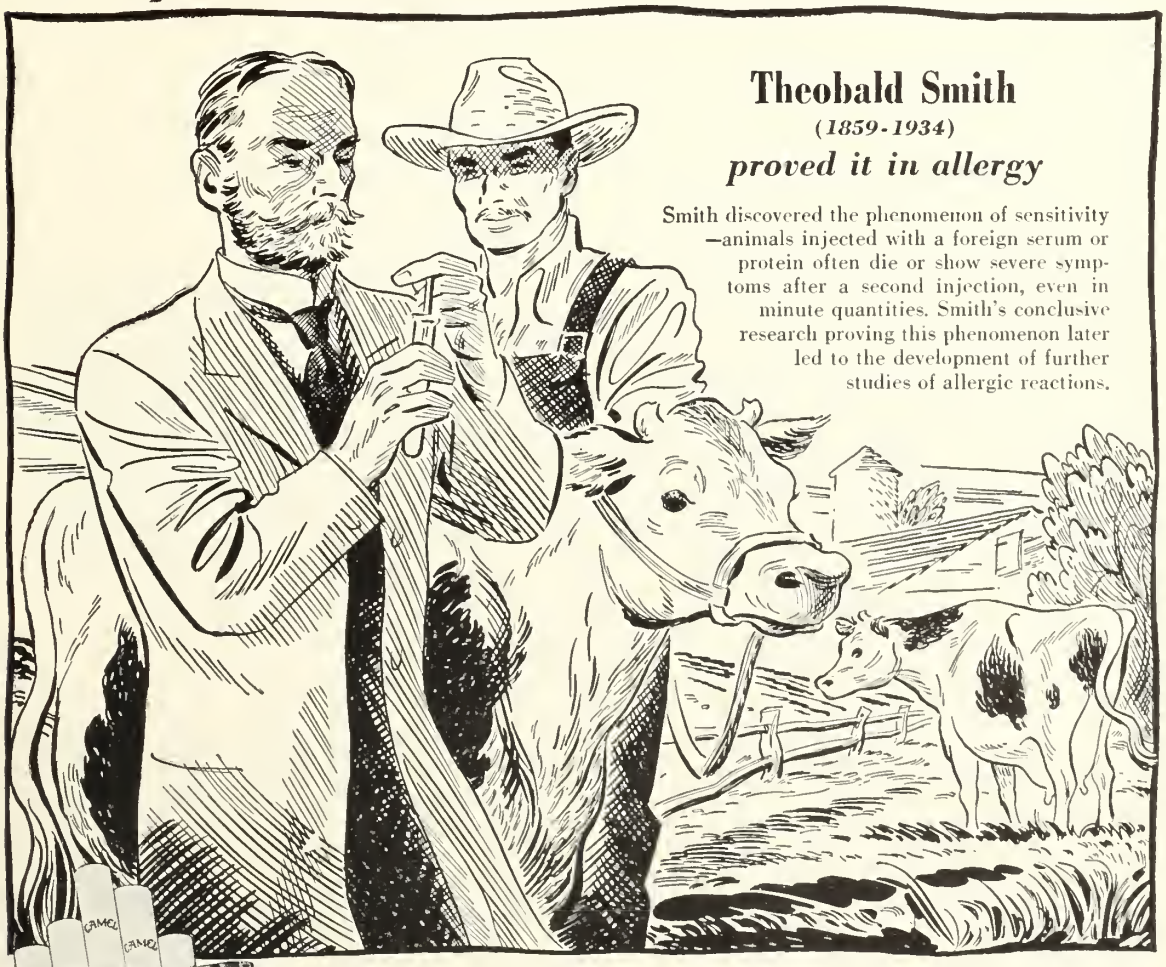
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REVEAL PREVALENCE OF ACNE AMONG TUBERCULOUS PATIENTS

(Continued from Page 58)

inclusive. Of 163 patients within these age limits 129 had acne, a percentage of 79.1.

"The decline in frequency after 26 was slow," according to Dr. Stillians. "Between the ages of 27 and 50, of 174 patients, 63 per cent still had acne, and among 10 patients between the ages of 51 and 60 there were four in whom the acne still persisted. Thus it appeared that the presence in the body of active tuberculosis not only increased the frequency of acne but greatly prolonged its course."

Dr. Stillians, Emeritus Professor of Dermatology at the Northwestern University School of Medicine, points to the striking effect which tuberculosis has on these patients by "the persistence of acne in the tuberculous patient beyond the age at which it commonly clears in the person who is not tuberculous."

The author cites another investigator who reported that in 3,215 tuberculous patients there were 1,092 cases of acne or 34 per cent. He agrees with this author's explanation as to why more instances of acne were found among convalescent than among very ill patients. The body contains migratory defense cells against infection which also form part of the body's connective tissue. This system of cells becomes exhausted in the extremely ill patients and therefore there is no reaction. When convalescence has begun, the system revives enough to reproduce the reaction in the skin that is called acne.



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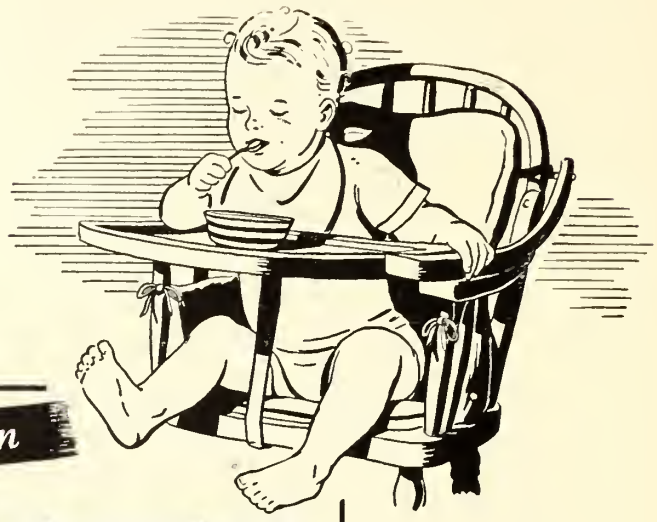
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The writers are Victor Goodhill, M.D., from the Department of Otolaryngology of the University of Southern California School of Medicine, and David B. Tyler, Ph.D., from the Department of Biology of the California Institute of Technology, Los Angeles. Their conclusion is based on an experimental study made on 12 healthy young volunteers from a Southern California Conscientious Objectors' Camp who were kept awake for 112 hours and occupied with various types of physical and mental activities involving a good amount of heavy physical labor.

Hearing acuity tests given two days before the experiment was begun had already determined that the hearing of each subject was within normal limits. When the same tests were given after 50 hours of wakefulness and again after 100 hours of wakefulness, no significant hearing loss or gain was shown by any of the subjects.

The writers find these results rather surprising. "For years," they write, "it has been the practice of some otologists to warn their patients to avoid undue fatigue before an audiometric examination."

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American Journal of Medical Sciences, 199, 802-810, June, 1940.

Conditioned Reflex Therapy of Alcoholic Addiction: An Evaluation of Present Results in the Light of Previous Experiences With This Method
Quarterly Journal of Studies on Alcohol, Vol. I, No. 3, pp. 501-516, December, 1940.

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A Preliminary Report on the Value of Reinforcement
Quarterly Journal of Studies on Alcohol, Vol. II, No. 3, December, 1941.

Technic
Diseases of the Nervous System, Vol. III, No. 8, August, 1942.

A Review of Six Years' Experience With This Treatment of 1526 Patients
Journal of the American Medical Association, Vol. 120, pp. 269 and 270. September 26, 1942.

Aversion Treatment of Alcohol Addiction
Quarterly Journal of Studies on Alcohol, Vol. 5, No. 2, pp. 216-228. September, 1944.

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*Goldthwait, J. E., Brown, L. Y., Swaim, L. T., and Kuhns, J. G., *Body Mechanics in Health and Disease*, 103-105, J. B. Lippincott Co., Philadelphia, 1937.

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SURGEON SAYS CANCER CLINICS HOLD KEY TO CANCER PROBLEM

Cancer of the stomach, which "strikes fear into the hearts of patients," is the most frequent of all malignant growths, according to Owen H. Wangensteen, M.D., from the Department of Surgery and the Graduate School of the University of Minnesota, at Minneapolis.

Writing in a recent issue of *The Journal of the American Medical Association*, Dr. Wangensteen says that in the light of present-day knowledge surgery is the only worthwhile treatment for patients with gastric cancer, adding that "the most radical surgery with the lowest mortality is the best surgery."

In his article, entitled "The Problem of Gastric Cancer," Dr. Wangensteen cites these conclusions:

Only 6 per cent of the patients whose disease is diagnosed as gastric cancer are alive five years later.

Only 25 per cent of the patients who have gastric cancer are suitable candidates for a curative type of operation.

Gastric cancer is curable, but the problem is to recognize the presence of the disease in time, so that patients will not be denied the real hope that timely and well performed surgical intervention holds out to sufferers from gastric cancer.

The death rate for cancer of the stomach is high in almost all countries, and deaths from gastric cancer comprise from 25 to 40 per cent of all deaths from cancer.

Deaths from cancer in this country rank only next to cardiac disease as the most frequent cause of death, and of the 150,000 annual deaths from cancer in the United States, approximately 40,000 persons die of gastric cancer.

New Hampshire, with 30.3 per cent of its people above 45, has an annual cancer mortality rate of 155.4 per 100,000, the highest in the United States.

X-rays, discovered in 1895, have since become the most reliable means of diagnosing gastric cancer.

Autopsy figures suggest that in men over 20, 6 per cent of all deaths are due to gastric cancer; and in men between 50 and 70 years, 8.8 per cent are caused by gastric cancer.

In women, 4.3 per cent of deaths at autopsy in patients over 20 years of age are due to gastric cancer: and 5 per cent of all deaths in women between 40 and 70 years are caused by this disease.

Dr. Wangensteen discusses many of the complex problems which confront the cancer specialist. He lists the names of several prominent surgeons who were considered authorities on the clinical aspects of stomach cancer: yet these authorities "recognized the signs of the disease in themselves too late to benefit by that therapeutic agent of which they themselves were masters." Among the late surgeons he lists are Johannes von Mikulicz, W. J. Mayo, D. P. D. Wilkie and Martin Kirschner.

"The late R. D. Carman, well-known roentgenologist who contributed a useful sign to the roentgenologic diagnosis of gastric cancer, had a gastric cancer which was inoperable before he recognized

(Continued on Page 74)

new evidence of the efficacy of Dexedrine in weight reduction

Excerpts from a recent study entitled, THE MECHANISM OF AMPHETAMINE-INDUCED LOSS OF WEIGHT: A Consideration of the Theory of Hunger and Appetite —by Harris, S. C.; Ivy, A. C., and Searle, L. M.: J. A. M. A. 134:1468 (Aug. 23) 1947.

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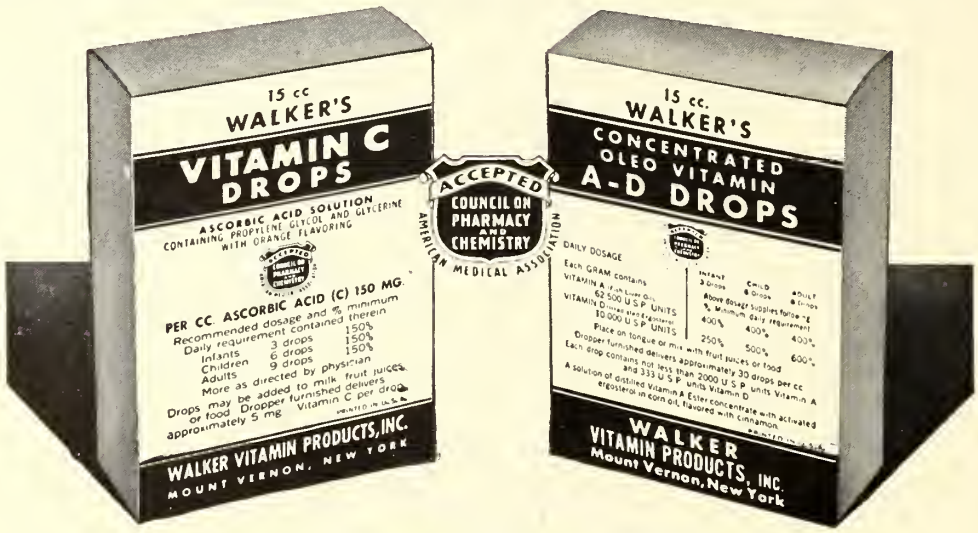
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SURGEON SAYS CANCER CLINICS HOLD KEY TO CANCER PROBLEM

(Continued from Page 70)

the signs of the disease in himself," Dr. Wangensteen says, adding:

"This circumstance in itself suggests that there is no symptom complex by which the disease can be identified, a situation which a number of other particulars and occurrences corroborate. The absence of warning signs of approaching danger accounts in large measure for the circumstance that so many patients with gastric cancer are inoperable when they first consult their physician."

Continuing, Dr. Wangensteen says:

"The interest of the public in cancer is real. Many persons, perhaps some physicians among them, believe that a Cancer Commission with authority to draft competent workers with research experience—such a group to pool their knowledge and talents—could with adequate funds untie the gordian knot of the problem of cancer in a period of five to ten years. Without question such a planned and coordinated attack on the problem of cancer would bring to light many new facts. The process of accumulating new facts is slow. The construction of an idea or an approach to a problem by experienced persons in possession of the assembled facts pro-

(Continued on Page 76)

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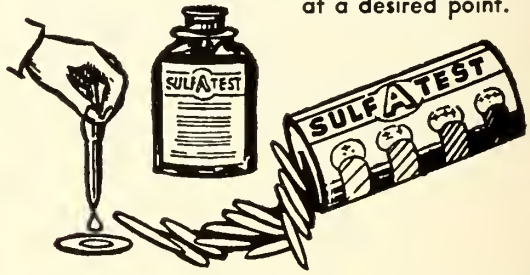
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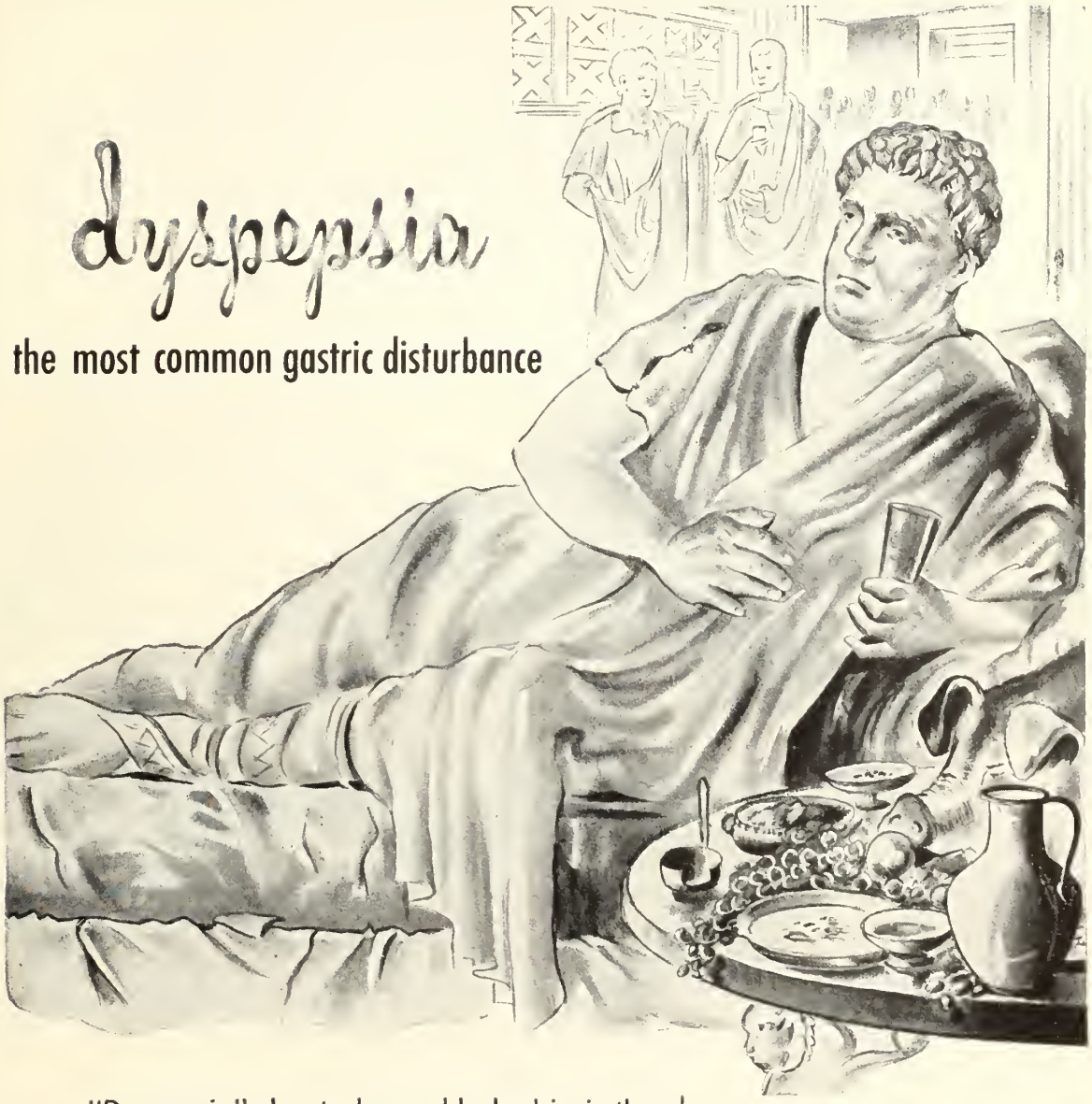
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SURGEON SAYS CANCER CLINICS HOLD KEY TO CANCER PROBLEM

(Continued from Page 74)

gresses directly with the availability of known facts. If they are few, the process will be as slow as constructing a house from bricks when only an occasional brick becomes available at periodic intervals.

"Such appears to be the situation in the experimental approach to the problem of cancer. Distinct progress is being made from year to year. Until the stock of available information is greater, it cannot be expected that a preventive agent against cancer or a revolutionary therapeutic agent to combat established cancer will be found quickly.

"The public looks to the members of the medical profession for intelligent guidance in matters of health. The public is willing to spend unlimited funds to conquer the scourge of cancer. The important contributions of scientists to the winning of the war has the public wondering whether use of the same tactics would not soon end the tyranny of cancer. Certainly cancer research should continue with unremitting vigor. But until many more facts concerning cancer are known it is unreasonable to expect that the experimental approach to the problem will quickly turn up a cure for cancer.

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"2. They must constantly enlarge their knowledge of the field by vigorous research and clinical investigation.

"3. All available resources must be combined to lend pursuit of the inquiry the greatest promise of solution.

"4. The solution of the problem must envisage an interest in the problem as it relates to the present generation as well as to those yet unborn."

NEW ASSOCIATE EDITOR OF JOURNAL

Dr. Morris Fishbein, editor of *The Journal of the American Medical Association*, announced recently that Dr. Richard J. Plunkett has taken over his duties as associate editor of *The Journal*. Dr. Plunkett, who formerly was vice-president and director of the Division of Health and Sanitation of the Institute of Inter-American Affairs in Washington, D. C., received his M.D. degree from Tufts Medical College in 1933 and his master's degree in public health from Harvard in 1939.

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[1]Human Fertility 10: 25 (Mar.) 1945.

[2]Warner, M. P.: J.A.M.A. 115: 279 (July 27) 1940.

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Miscellaneous California Medical Associations

Board of Medical Examiners of the State of California

San Francisco—515 Van Ness Avenue, Room 214. (2)
Los Angeles—906 State Building.
Sacramento—Business and Professional Building, 1020 N Street, Room 536.
Secretary, Frederick N. Scatena, M.D., 1020 N Street, Room 536, Sacramento 14.

Medical Society of State of California

Optional Medical Defense—C.M.A. Members. 131 South Rampart Blvd., Los Angeles 4, c/o G. H. Kress, M.D.

Department of Public Health of the State of California

San Francisco—1122 Phelan Building, 760 Market Street, San Francisco 2; UNderhill 8700.
Sacramento—631 J Street.
Los Angeles—State Office Building, 217 West First Street, MAdison 1281.
Director, Wilton L. Halverson, 603 Phelan Building, 760 Market Street, San Francisco 2.

The Public Health League of California

Executive Secretary, Ben H. Read, San Francisco office, 251 Kearny Street 8, phone SUtter 8470, Los Angeles office, 108 West Sixth Street 14, TUcker 9069.

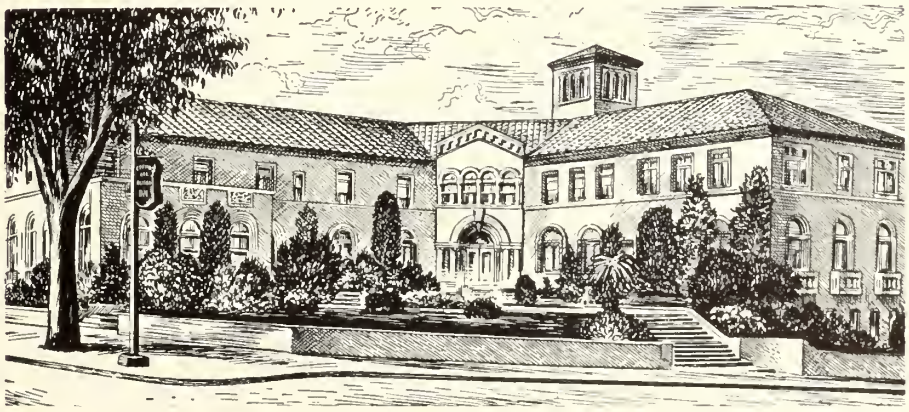
Medical Schools in California

University of California Medical School, Medical Center, San Francisco 22.
Stanford University School of Medicine, 2398 Sacramento St., San Francisco 15.
School of Medicine, University of Southern California, 3551 University Ave., Los Angeles 7.
School of Medicine, College of Medical Evangelists, 312 N. Boyle Ave., Los Angeles 33.

(For roster of County Society officers, see last month's issue.)

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THE Postgraduate Committee of THE ASSOCIATION FOR THE STUDY OF INTERNAL SECRETIONS, under authority of its Council, announces a course of lectures and demonstrations in CLINICAL ENDOCRINOLOGY to be held in LOS ANGELES at the BILTMORE HOTEL, FEBRUARY 23 to 28, 1948, inclusive.

The faculty will consist of the most prominent researchers and clinical endocrinologists in the various branches of the medical sciences gathered from the United States and Canada.

It is the intent of the Committee that this course be a practical one of interest and value to the GENERAL PRACTITIONER AND SPECIALIST ALIKE.

A fee of $100 will be charged for the entire course and the attendance will be limited to 100. Registration will be in the order of checks received and will close on February 1, 1948. Should there be an insufficient number of applicants to warrant the course, the registration fee will be immediately refunded in full.

Please make your application on your letterhead and forward, together with your check payable to THE ASSOCIATION FOR THE STUDY OF INTERNAL SECRETIONS, to DR. E. KOST SHELTON, CHAIRMAN of the POSTGRADUATE COMMITTEE, 921 WESTWOOD BOULEVARD, LOS ANGELES 24, CALIFORNIA.

Since satisfactory hotel accommodations are still difficult to procure on short notice in Los Angeles, especially during the winter season, it is suggested that all applicants MAKE THEIR RESERVATIONS EARLY.

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Copy for classified advertisements should be received not later than the tenth of the month preceding issue.

OPPORTUNITIES AVAILABLE

PHYSICIANS WANTED—EENT specialist to join five-man group of specialists, Oregon. Salary to $10,000. GENERAL PRACTITIONER for California institution, pays to $580.00. OB-GYN specialist for association with large northern California industrial and group practice. Salary plus percentage. ORTHOPEDIST to take over retiring specialist practice with northern California group. PEDIATRICIAN to associate with general practitioner, southern California. Percentage of gross, no overhead. GENERAL PRACTITIONER qualified in surgery for contract in Near East. Salary to $10,000. RADIOLOGIST, qualified therapeutic and diagnostic for California hospital. Head department. Must be interested some teaching. Salary and private practice. RESIDENT PHYSICIAN for 80-bed California hospital. Good training in medicine and surgery. Salary to $400.00. Young Physician. SURGEON, diplomate of board preferred. Associate with owner physician of small hospital in Northwest. Partnership after trial period. INTERNIST capable of investing in clinic associated with small hospital, northern California. Write, Hedwig Falkell, Director, Pacific Coast Medical Bureau Agency, Inc., 1406 Central Tower, San Francisco 3.

WANTED: Director of Public Health and Welfare Department in San Mateo County, California. Salary range $12,156 to $15,204 per annum. Candidates must possess degree of M.D. and have had at least five years' responsible administrative experience in public health field. Permanent Civil Service position. Closing date, December 15, 1947. For details write to: Civil Service Commission, Court House, San Mateo County, Redwood City, California.

RESIDENT PHYSICIAN for private sanitarium and clinic near Los Angeles. Internal medicine and some experience in N. P. work desirable. Excellent opportunity for qualified, energetic, ambitious gentile. Salary open. Furnished residence on grounds. State full particulars regarding experience, training, religion and salary expected. Also furnish recent photograph. Box 12,000, California Medicine.

WANTED—(a) Pathologist to direct laboratories small hospital located in winter resort town of Southern California; part-time only; Diplomate required. (b) Ophthalmologist, Diplomate American Board, to head department in group of specialists, American Board men; excellent hospital facilities. (c) Radiologist, Diplomate of the American Board, to direct department of radiology, privately operated hospital; medium bed capacity; preferably one interested in teaching; $8,000-$10,000. (d) Pediatrician to become associated with small clinic long established in California. (e) Young woman physician to become associated with general practitioner; very busy practice; preferably one trained in pediatrics; Los Angeles area. (f) Physician trained in physical medicine to direct department in fairly large hospital; part or full time. (g) Resident physician; small general hospital; must be qualified to assume considerable responsibility in medicine and surgery; excellent staff, $3,600-$4,800; home available. Please write, Burneice Larson, Director, The Medical Bureau, Palmolive Bldg., Chicago 11.

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WANTED—Practice Exchange or Salaried Position, San Francisco area. Have active medical practice middle California, town of 30,000. Box 12,050, California Medicine.

(Continued on Page 14)

nontoxic

smaller dosage

treatment of inflammatory enteric diseases

'SULFATHALIDINE' *phthalylsulfathiazole*, developed by the Medical Research Division of Sharp & Dohme for treatment of inflammatory conditions of the intestine, is clinically nontoxic and effective in *smaller dosage* . . . 0.05 gm. to 0.1 gm. per kilogram of body weight. • 'SULFATHALIDINE' *phthalylsulfathiazole* maintains a high bacteriostatic concentration in the gastrointestinal tract, markedly alters the bacterial flora, and profoundly reduces Escherichia coli, clostridia and related organisms. 'SULFATHALIDINE' *phthalylsulfathiazole* is effective even in the presence of a watery diarrhea. • Administered recently to 100 patients with inflammatory diseases of the intestine. 'SULFATHALIDINE' *phthalylsulfathiazole* was effective in the treatment of 90.* The clinician reported:

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*J. A. M. A. 129:1030. December 15, 1945.

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(Clipped from Aunt Jane's Corner in the *Lafayette (Calif.) Sun*)

Dear Aunt Jane:

"My Hobby is watching bugs and worms. Mother dosent like to have me do it too much because she dosent like bugs and worms but daddy says it is all right although he dosent like them too.

"One day I was watching two catapillers on the side walk. They looked like they were racing. They were raising up their backs like a cat does when there is a dog and then lying down flat again. The way they walk is by raising up their backs and lying down flat again real fast and a whole lot of times.

"One of the catapillers got tired and quit running. The other one crawled on but I kept on watching both of them until one of them went too far. The one that kept going kept making his back go up and down untill mother made me quit watching and come in the house and eat dinner.

"Ants dont do the same as catapillers but keep busy anyway. I wish there would be more bugs to watch."

JOHN ROWELLS
9 years old

Mother was *right*, John, to make you quit watching. The one that crawled on *did* go too far.

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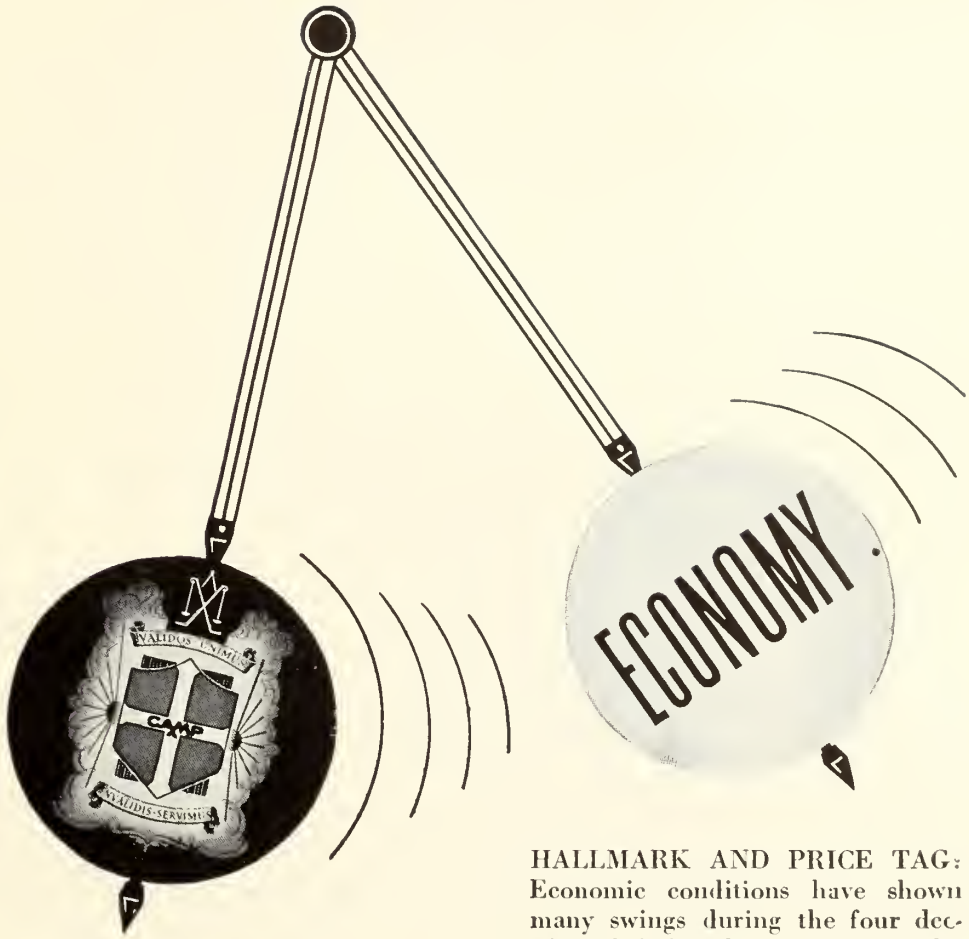
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(Continued from Page 8)

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(Continued on Page 16)

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Immediate and substantial improvement in the great majority of cases—that is the encouraging prospect offered by Tridione to thousands of children suffering from *petit mal*. Tridione has achieved an outstanding clinical record in this field. In one study, for example, Tridione was given to 166 patients suffering from *petit mal* (pyknoepilepsy), myoclonic jerks or akinetic seizures.[1] This group had received only mediocre benefits from the use of other medicaments. With Tridione *83% were definitely improved*. Thirty-one percent became free of seizures; 32% had less than one-fourth of the previous number; 20% improved to a lesser extent; 13% were unchanged; and only 4% became worse. Furthermore, in some cases the seizures *did not return* when Tridione was withdrawn. • Clinical investigations have also shown that Tridione is beneficial in certain psychomotor cases when combined with other antiepileptic therapy.[2] You may obtain Tridione in 0.3-Gm. capsules and in pleasant-tasting aqueous solution containing 0.15 Gm. per fluidrachm. Wish literature? Just drop a line to ABBOTT LABORATORIES, North Chicago, Ill.

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1. Lennox, W. G. (1947), Tridione in the Treatment of Epilepsy, J. Amer. Med. Assn., 134:138, May 10. 2. DeJong, R. N. (1946), Further Observations on the Use of Tridione in the Control of Psychomotor Attacks, Am. J. Psychiat., 103:162, Sept.

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(Continued from Page 14)

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RATES PENICILLIN SUPERIOR TO SILVER NITRATE FOR EYES OF NEWBORN

A Memphis, Tenn., physician points out that penicillin is superior to silver nitrate in preventing the development of inflammation in the eyes of newborn infants.

Writing in a recent issue of *The Journal of the American Medical Association*, H. Charles Franklin, M.D., from the Department of Obstetrics and Gynecology, the University of Tennessee College of Medicine, presents a comparative study of 1,710 infants, 961 of whom were given penicillin and 749 silver nitrate.

(Continued on Page 17)

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RATES PENICILLIN SUPERIOR TO SILVER NITRATE FOR EYES OF NEWBORN

(Continued from Page 16)

Twenty (2.1 per cent) of 961 infants exhibited pus in one or both eyes during or after receiving penicillin drops and 45 (6.0 per cent) of 749 exhibited pus after silver nitrate.

Abnormalities other than the presence of pus were noted in each group, states Dr. Franklin. Swelling of the eyelids was noted in 31 per cent of infants after penicillin application and in 58 per cent after silver nitrate. Redness of the delicate lining of the eyelids was seen in 42 per cent after penicillin and in 72 per cent after silver nitrate. Watery discharge was least frequent and occurred in 2 per cent after penicillin and in 10 per cent after silver nitrate.

Although the silver nitrate drop method is the most popular today, the physician points out that "silver nitrate is irritating to the extent of pus formation is confirmed by the fact that a high percentage of infants in the group receiving silver nitrate prophylaxis exhibited pus on the day of birth and the first day of life. Likewise a high percentage of those infants exhibiting other abnormalities at this time was probably due to this irritation." The author adds that "instances are recorded of infants being made blind by the use of a solution too high in concentration."

(Continued on Page 18)

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RATES PENICILLIN SUPERIOR TO SILVER NITRATE FOR EYES OF NEWBORN

(Continued from Page 17)

The author feels that the foregoing facts suggest that penicillin is in several respects superior to silver nitrate. "Penicillin in proper concentration is non-irritating," he states, "nonpainful, nondestructive and effective in the treatment of ophthalmia neonatorum [inflammation of the eyes in the newborn]."

The Council on Medical Education and Hospitals of the American Medical Association approved 6,280 hospitals containing 1,468,714 beds and 84,145 bassinets during 1947. Approximately 15,153,452 patients were admitted to these hospitals during 1946.

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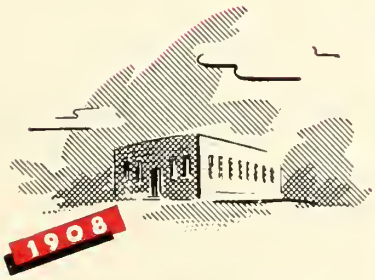
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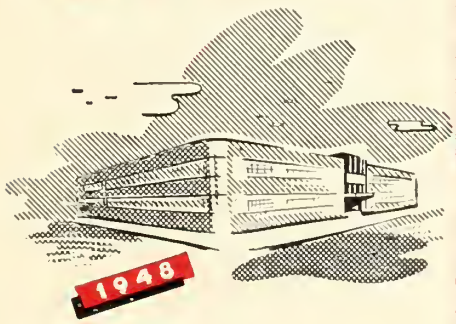
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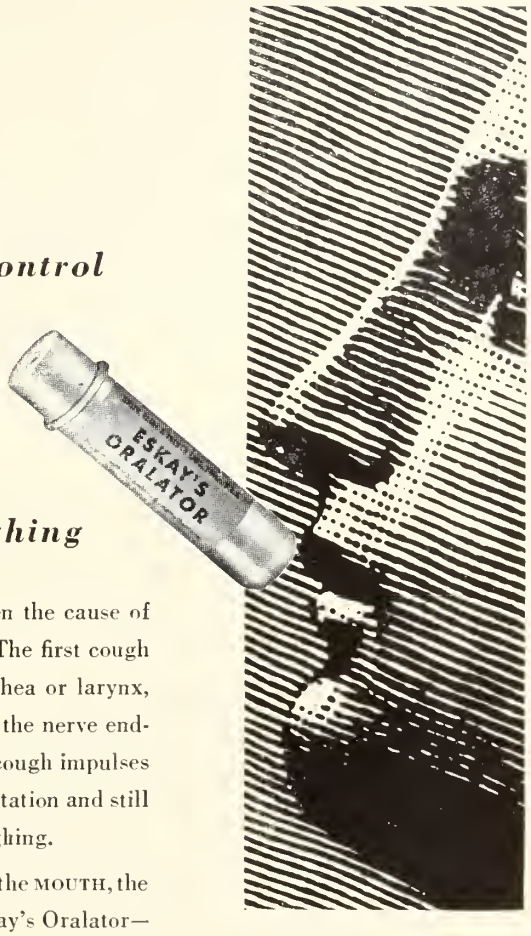
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50 PER CENT OF POPULATION SUFFERS AT SOME TIME FROM ALLERGY

Allergy specialists estimate that 50 per cent of the population suffers at one time or another from a mild form of the disease. Half of these cases could be avoided by proper preventive measures, according to an article in a recent issue of *Hygeia*, health magazine of the American Medical Association.

The author—William G. Roberts of New York—explains that "acquired allergy is caused by proteins that refuse to be digested. They fight to get out of the digestive tracts and into the bloodstream. Or else they try to enter the bloodstream through various natural portals, such as the nose. Once these proteins escape into the bloodstream they may form what are called antibodies. They fix themselves tightly to a cell in the body and wait for some of their old relatives. When one of their former brothers, a protein of the same type they once were, enters the body and comes in contact with them, the antibodies put on a great battle. The human being sheltering these enemies in his bloodstream then shows allergic symptoms."

The period before birth, infancy and childhood are stressed as the danger periods for picking up allergies. A person is also vulnerable during illness and convalescence.

The author lists the following ways that a child may become allergic: Food allergies: By overindulgence of cravings, or excessive eating, on the part of the expectant mother.

By allowing the infant to take, or giving the infant, any food in excess.

By the introduction of new foods, particularly certain allergenic foods (raw eggs, raw meats, raw vegetables, fruits and cereals) during periods of severe gastrointestinal disturbances such as diarrhea, dysentery and typhoid fever.

By introduction of new foods and allergenic foods during convalescence from those diseases, and other illnesses; and following surgery.

Dust and pollen allergies: By heavy exposure to specific dust or pollen allergens.

Drug allergies: By drugs administered in large doses; and by intense treatment by drugs.

By indiscriminate use of external medicaments for the skin.

Horse serum allergies: By inhalation of horse dander: by eating of horse flesh and by repeated injections of antisera containing horse serum.

The following preventive measures are recommended by leading American pediatric allergists:

Food allergies: Women during pregnancy should eat a well balanced diet, without excesses, particularly of allergenic foods; raw foods should be avoided during convalescence from disease, and during disease and convalescence, the infant and young child should have only food denatured by cooking, given in small quantities and well diversified.

All new foods should be given regularly when once started. If a new food is introduced it should be fed the child again within three to seven days, and at comparable intervals from then on until he has developed thorough tolerance for it.

(Continued on Page 24)

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50 PER CENT OF POPULATION SUFFERS AT SOME TIME FROM ALLERGY

(Continued from Page 22)

Dust and pollen allergies: Environment is the danger here. Attention first must be given the nursery. It should be furnished simply, without hangings or heavy rugs. Everything in it should be washable so that cleaning can be done without raising much dust. Articles such as down and feather pillows, comforters and overstuffed furniture, which produce dust, should be eliminated altogether or reduced to a minimum.

The author points out that "infants who sleep with pets or stuffed woolly toys and those who bury their heads in the bedding may be disposed to develop allergy."

Drug allergies: Drugs should not be given the infant or child indiscriminately, or in large doses. Unfortunately this is being done with sulfa and penicillin drugs today. Many cases of allergy to these new drugs already have been reported.

Horse serum allergies: All children should be immunized with diphtheria and tetanus toxoid and given booster doses of toxoid when necessary thus eliminating the need for horse serum antitoxin.

The American Medical Association, through its Bureau of Legal Medicine and Legislation, maintains an active interest in the enactment of medical licensure laws to safeguard the public against unqualified practitioners of the healing art.

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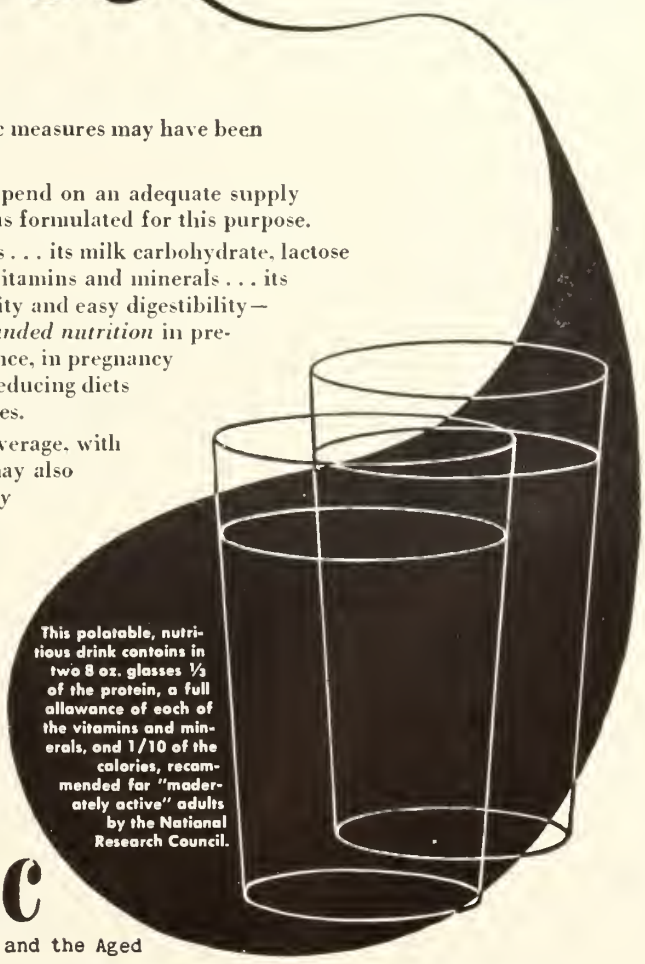
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SUPPLEMENTING INFANTS' DIET WITH MEAT FOUND BENEFICIAL

Strained meat, a concentrated source of protein, can now be added to the formulas of bottle-fed babies beginning at the age of six weeks, according to Ruth M. Leverton, Ph.D., of Lincoln, Neb., and George Clark, M.D., of Omaha, Neb.

Writing in a recent issue of *The Journal of the American Medical Association*, the authors state that "the use of meat in the diet of infants before the age of six to nine months has not been a general practice, because of the prejudice that meat is hard to digest and because it has not been available in a suitably homogeneous form. With scientific evidence to refute the prejudice and with commercially strained meat now available for use, meat presents itself to the pediatrician and parent as a concentrated source of high quality protein for supplemental feeding at an age when the protein requirement, expressed on the basis of body weight, is at its highest."

Dr. Leverton, from the Department of Home Economics, and Dr. Clark, the Department of Pediatrics, University of Nebraska, state that during a six month period 33 infants were studied; beginning at the age of six weeks, 18 received the strained meat supplement and 15 were observed for comparison.

The authors explain that the "strained meat was mixed with the formula just before it was distributed into the bottles for individual feedings. The amount of meat added was determined by calculating the quantity necessary to increase the protein content

(Continued on Page 28)



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SUPPLEMENTING INFANTS' DIET WITH MEAT FOUND BENEFICIAL

(Continued from Page 26)

of each infant's formula 25 per cent, and therefore it varied with the strength of the formula and the variety of meat used. The varieties were veal, beef, pork and lamb; one was used each week, and then the sequence was repeated. The amount of strained meat averaged about 27 grams [approximately one ounce] daily. The total amount was not added abruptly—one third of the total was added for three days, this was increased to two thirds for the second three days, and then the full amount was added beginning the seventh day. The "dextri-maltose" in the formula was decreased sufficiently to compensate for the calories furnished by the meat."

The nurses considered that in general the babies who received strained meat routinely were more satisfied and slept better at night than did the 15 who did not receive this supplement. Dr. Clark, who was in charge of the medical care for all the children, considered that the babies were in a better physical condition as a result of receiving the meat supplement for it promotes the formation of hemoglobin (the oxygen-carrying red pigment of the red corpuscles) and red blood cells.

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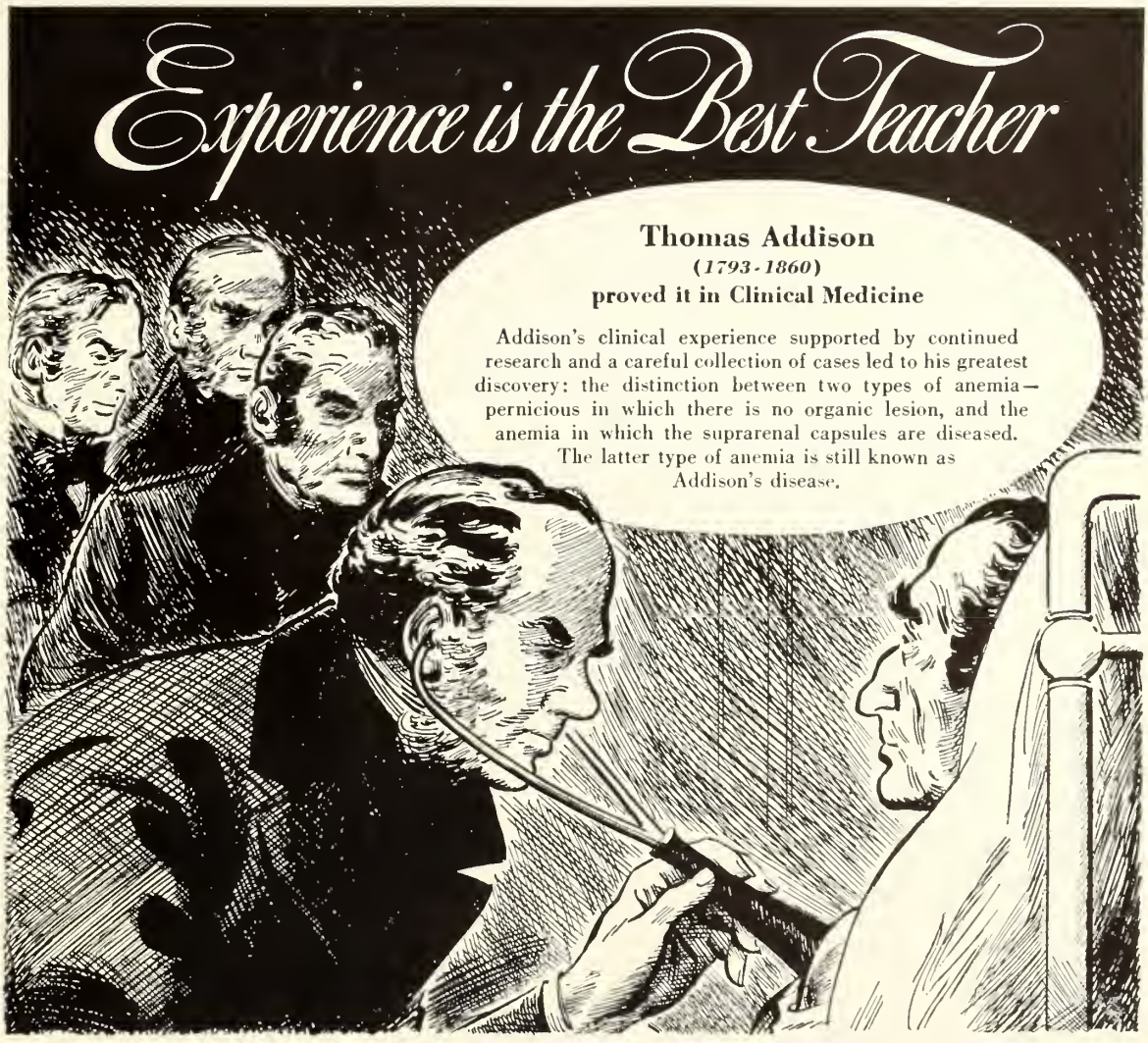
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At a recent session of the Legislature several amendments to the Business and Professions Code relating to the practice of medicine were passed and signed by the Governor. They became effective September 19, 1947.

Among the amendments was the addition of Section 2142.10 which provides that any person who represents or holds himself out as a physician or who represents himself as a physician in any combination with any other designation without having a valid, unrevoked certificate as a physician and surgeon issued under the chapter is guilty of a misdemeanor. Another amendment changed the method of payment of the application fee for a reciprocity certificate providing that only $10 be filed with the application, and the remainder of the $100 fee due if the applicant qualifies for a certificate. This will eliminate the holding of large sums in abeyance pending the review of the application.

Section 2174 relating to court action on schools disapproved by the Board was amended and now provides that in such an action the court shall proceed under Section 1094.5 of the Code of Civil Procedure provided, however, that the court may not express an independent judgment on the evidence. It further provides that the action shall be commenced and tried in the Superior Court in the State of California in and for the County of Sacramento.

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Literature on request.

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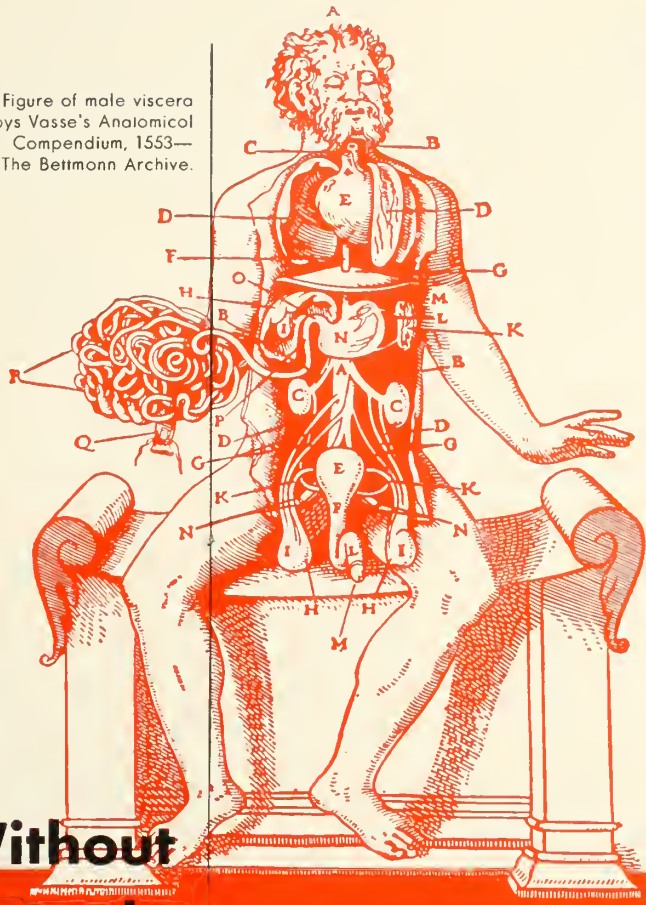


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Anatomy: Figure of male viscera from Loys Vasse's Anatomicol Compendium, 1553— Courtesy, The Bettmonn Archive.

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SURGICAL PROGRESS REPORTED IN LITTLE-PUBLICIZED LUNG CANCER

The number of cases of cancer of the lung is apparently increasing every year, and this type of cancer is now more frequently encountered than any other except cancer of the stomach, according to three members of the Department of Surgery of Tulane University of the Louisiana School of Medicine, and the Ochsner Clinic of New Orleans.

"The relative frequency and the clinical importance of gastric cancer have been generally realized for a long time," write Alton Ochsner, M.D., Michael DeBakey, M.D., and J. Leonard Dixon, M.D., in a recent issue of *The Journal of the American Medical Association*. "There has been no comparable appreciation of the frequency and clinical importance of pulmonary cancer." And yet, the three writers point out, the survival rate in cancer of the lung is now actually better than the survival rate in cancer of the stomach.

The writers base their conclusions on 12 years' surgical experience with cancer of the lung, during which 412 patients were observed on the Tulane University School of Medicine service in the Charity Hospital of Louisiana at New Orleans and in private practice at the Ochsner Clinic. Of this number, 246 patients underwent surgical exploration, 147 having the diseased lung removed.

Cancer of the lung probably represents about 10 per cent of all cancers, the doctors report. It is more commonly found in men than in women, in white patients than in Negroes, and in those 50 years of age or older. The right lung is involved somewhat more frequently than the left.

The disease begins without much warning. The commonest symptoms are a cough, loss of weight, pain or discomfort in the chest, a history of previous respiratory infection, spitting of blood, and labored breathing.

A routine x-ray examination is most valuable in diagnosing the disease; bronchoscopic examination is the most accurate, but in about one-half of the cases in the doctors' series the tumor was not within visual range of the bronchoscope. In about one-third of the cases it was necessary to make a surgical incision of the chest wall to confirm the diagnosis.

Removal of the lung before the cancer has spread elsewhere is the only possible cure. The doctors report that in only about three-fifths of the cases could an operation be recommended, however, and in only about three-fifths of the operations that took place was is considered advisable to remove the lung. The total surgical mortality was 24.5 per cent, but it improved over the 12-year period: the mortality was 46.4 per cent for the group operated on before 1942, no more than 19.3 per cent for those operated on after that date. Cardiovascular disease was responsible for 47 per cent of the cases ending fatally while the patient was still in the hospital.

"Of the patients in whom resection of the lung was possible and who were operated on five years ago or more, 23.3 per cent are still alive," the doctors state. "This gives about an eight per cent five-year survival rate for all cases of carcinoma of the lung." It is significant that the five-year survival rate among

(Continued on Page 36)



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SURGICAL PROGRESS REPORTED IN LITTLE-PUBLICIZED LUNG CANCER

(Continued from Page 34)

patients whose cancers had not yet spread to regions outside the lung was nearly seven times as great as for those patients whose growths were no longer localized.

"When the physician becomes cognizant of the relative frequency of primary pulmonary malignant neoplasms and recognizes these cases earlier, much better results will be obtained," the writers observe. "The fact that a better than 20 per cent five-year salvage rate can be obtained in cases of resection, in many of which only palliative resections are performed, indicates that the lesion is relatively slow-growing and that the ultimate outlook is not as pessimistic as it has been considered in the past."

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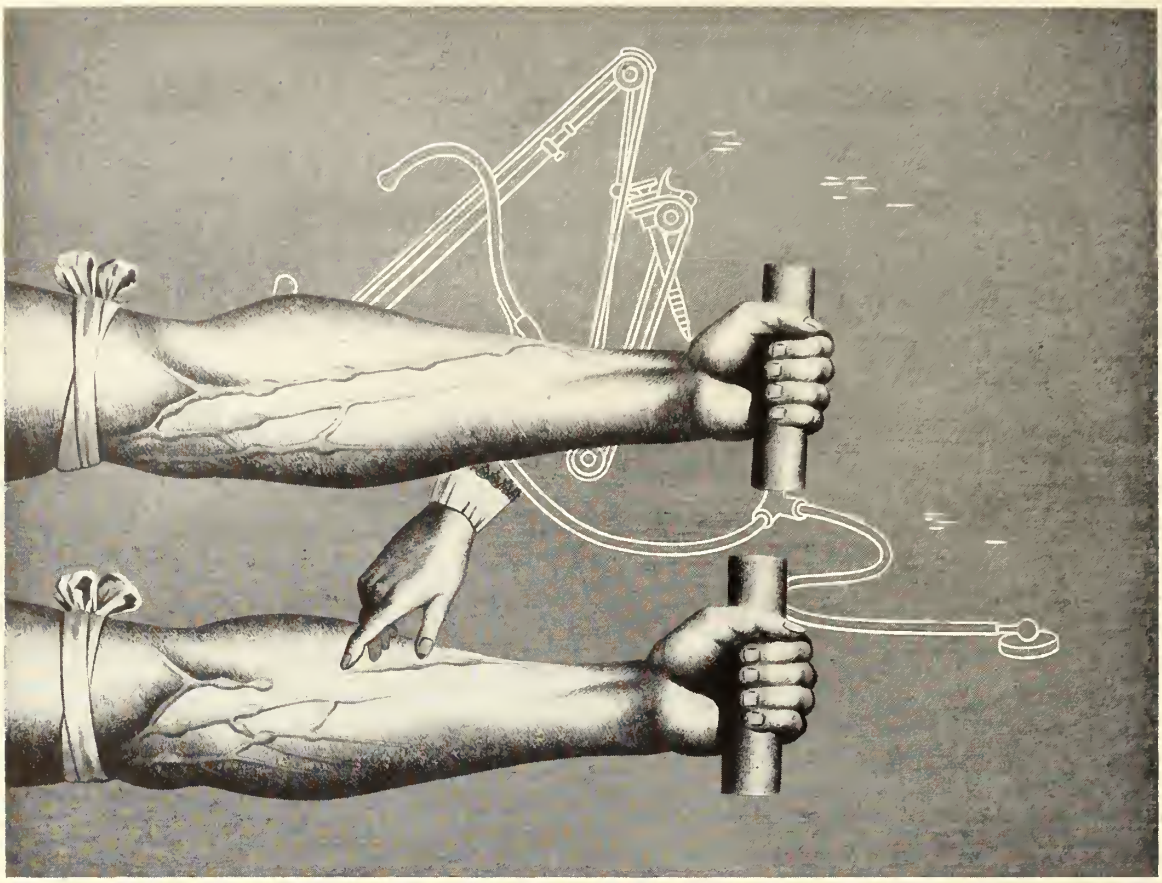
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PRESERVED CARTILAGE IS SUCCESSFULLY USED IN PLASTIC SURGERY OF EYE

Preserved cartilage is preferable to fresh cartilage in plastic surgery of the eye, writes Sidney A. Fox, M.D., New York, in a recent issue of *Archives of Ophthalmology*, published by the American Medical Association.

In most types of modern restorative surgery a graft of cartilage is taken from the patient's own rib to be used in repairing the injured part. The use of preserved cartilage in plastic surgery has been revived only recently, Dr. Fox states. It has been used most extensively in reconstructions of the nose, ear, forehead, chin and other facial structures. However, he reports that he has used it in 17 cases of plastic surgery of the eye—with uniformly good results.

In four cases the preserved cartilage was used as a substitute for the firm framework of connective tissue which gives shape to the eyelid, in reconstructing and repairing the lid. In four cases it was used to repair the bony contours around the eye-socket after fracture and deformity. In five cases it was used to raise the contents of the eye-socket after fracture of its bony floor. In the remaining four cases it was used to fill in abnormal cavities in the empty socket caused by fracture. Dr. Fox followed all of these cases for at least six months, and noticed no change in the grafts. There were no infections.

The chief advantages of using preserved rather than fresh cartilage, according to Dr. Fox, are four:

(Continued on Page 44)

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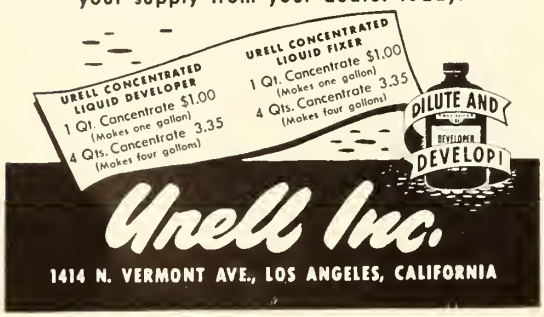
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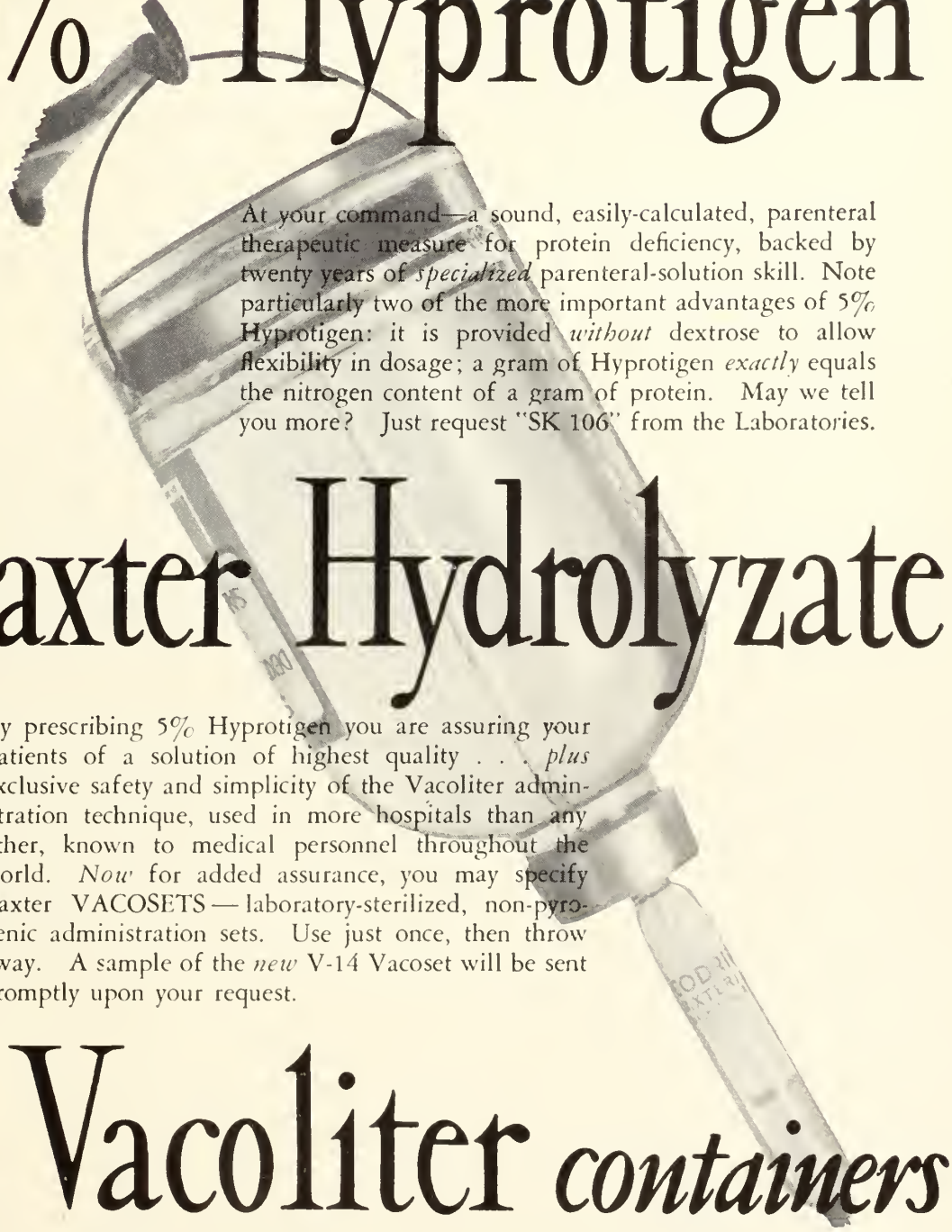
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PRESERVED CARTILAGE IS SUCCESSFULLY USED IN PLASTIC SURGERY OF EYE

(Continued from Page 42)

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Some plastic surgeons, Dr. Fox says, find that after a period of time preserved cartilage, being a "dead" tissue, has a tendency to be absorbed by the surrounding tissue into which it has been implanted. If this happens with a graft used to reshape a nose or chin the result may be failure, with further surgical repair necessary. He believes that this is less important in eye surgery. Even if a thin plate of preserved cartilage implanted into a lid is ultimately completely absorbed and converted into dense fibrous tissue, the resultant tissue structure closely resembles that which supports the lid.

The rung of a ladder was never meant to rest upon, but only to hold a man's foot long enough to enable him to put the other somewhat higher.

—Thomas Huxley, *On Medical Education.*

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DEPLORABLE HEALTH CONDITIONS COST MANY LIVES, DOCTOR SAYS

The children in Greece are dying faster than they are born, according to Dr. John Caminopetros, who cites deplorable health conditions in a land which, he says, suffered "most as the result of aggressive and inhuman warfare."

Writing in a recent issue of *Hygeia*, the health magazine of the American Medical Association, Dr. Caminopetros says that there are more than 500,000 Greeks suffering from tuberculosis in some stage.

Dr. Caminopetros, director of the Pasteur Institute of Athens and a former vice-president of the Greek Medical Association, based his article largely on a statistical survey made by Professor Valaoras of the Department of Public Health and Hygiene at the University of Athens.

The article says that these tuberculous patients "must have hospitalization if they are to survive and contagion is to be kept within anything like its present limits."

"But there just aren't any hospitals for these sufferers," Dr. Valaoras reported. "Not only that, we do not even have the trained personnel—doctors and nurses—to see these people, much less give them any care."

Dr. Caminopetros' article says in part:

Not only tuberculosis but malaria and a wide variety of other diseases are wiping out Greek lives

(Continued on Page 52)

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* *Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154*
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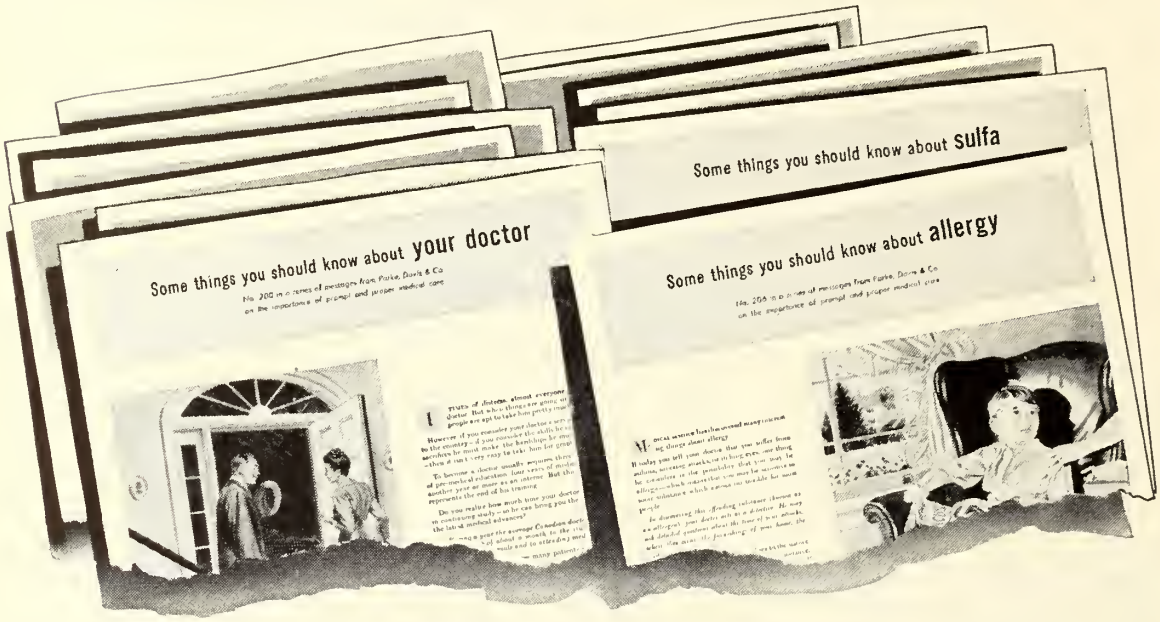
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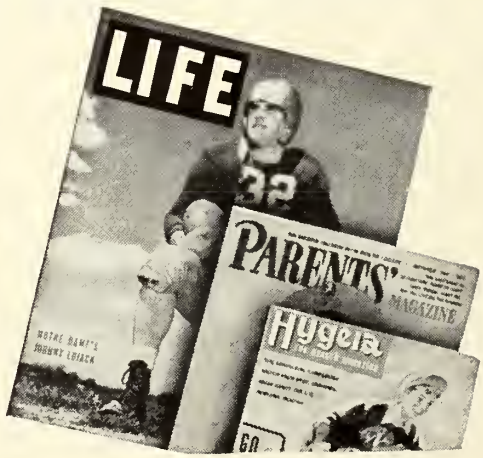


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(Continued from Page 48)

by the tens of thousands. The death rate is ghastly when compared to any civilized standard.

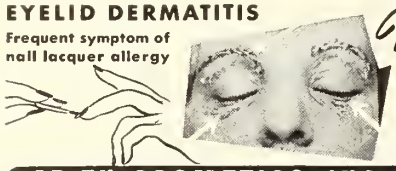
"Walk down any road in Greece and you'll see sick men and women," Dr. Valaoras says. "Walk into any Greek home—most of which are unbelievably squalid—and you'll see at least one person desperately ill. Walk into one of our very few community medical clinics and you'll see disease-ridden people eagerly awaiting all too infrequent medical attention. If saboteurs were at work in Greece during the war, certainly many more of them—health saboteurs—are busily undermining the country today."

The average Greek has lost over 150 working days a year mostly from malaria. This dreaded disease annually struck down more than 2,000,000 persons in Greece and infected almost 100 per cent of the population. Are these figures so startling? Just compare them with statistics in the United States where the deaths from this cause are almost negligible—only 0.4 per 100,000 population, according to the United States Bureau of the Census.

More than 300 of every 100,000 persons die of tuberculosis every year in Greece. In the United States, only 41 persons out of every 100,000 succumb

(Continued on Page 56)

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*Based on average reported values for milk.

DEPLORABLE HEALTH CONDITIONS COST MANY LIVES, DOCTOR SAYS

(Continued from Page 52)

to the tubercle bacillus annually—less than one-seventh of the death rate from this cause in Greece.

"In Greece, 25 of every 100 babies die before they reach the age of 21," says Captain Theodore Meyer, formerly of the United States Navy and now Director of the Health Division of Greek War Relief Association. "If you consider that only 10 of 100 die in this age group in the United States, the Greek picture begins to look pretty bad."

Dr. Meyer goes on to say that 35 of every 100 Greeks die before they reach the age of 40. In the United States, says the Bureau of the Census, the death rate under 40 is exactly half that figure—17.5 of every 100. And these figures do not really tell the story because the United States is a nation of older people while the population of Greece is in the younger age group.

The Greek War Relief medical chief in Athens states that every fifth death in Greece is that of a child under five. Medical authorities estimate that every year the lives of more than 20,000 Greek children could be saved by adequate and early medical attention.

And further to understand the appalling conditions, one should know that in the entire country there are only 152 small hospitals. They are small and miserable. Many are virtually in ruins with

(Continued on Page 58)

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American Journal of Medical Sciences, 199, 802-810, June, 1940.

Conditioned Reflex Therapy of Alcoholic Addiction: An Evaluation of Present Results in the Light of Previous Experiences With This Method
Quarterly Journal of Studies on Alcohol, Vol. I, No. 3, pp. 501-516, December, 1940.

Conditioned Reflex Therapy of Chronic Alcoholism:
A Preliminary Report on the Value of Reinforcement
Quarterly Journal of Studies on Alcohol, Vol. II, No. 3, December, 1941.

Technic
Diseases of the Nervous System, Vol. III, No. 8, August, 1942.

A Review of Six Years' Experience With This Treatment of 1526 Patients
Journal of the American Medical Association, Vol. 120, pp. 269 and 270, September 26, 1942.

Aversion Treatment of Alcohol Addiction
Quarterly Journal of Studies on Alcohol, Vol. 5, No. 2, pp. 216-228, September, 1944.

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critically ill patients on ramshackle cots in cellars littered with rubble.

Dr. Valaoras' information indicates that there are less than 17,000 beds to service Greece's 7,500,000 population. He states that there are only 6,000 beds in the provinces. This constitutes roughly one bed to every 1,200 persons, as contrasted to one bed to every 80 persons in the United States.

Paralleling these conditions, there is an almost unbelievable lack of trained medical personnel. My colleagues in Greece number less than 7,000, most of whom practice in urban areas. This adds up to something less than one doctor for every 1,000 persons. In the United States, there is approximately one doctor to every 741 persons.

The situation in the field of graduate nursing is even worse. Imagine the Greek nation with only 600 registered nurses, or one nurse for every 12,000 persons. Just compare these figures to those in America where every 454 Americans are assured the services of a nurse.

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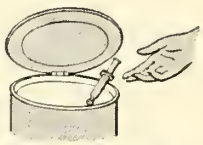
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